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**DENTAL
DIGEST**

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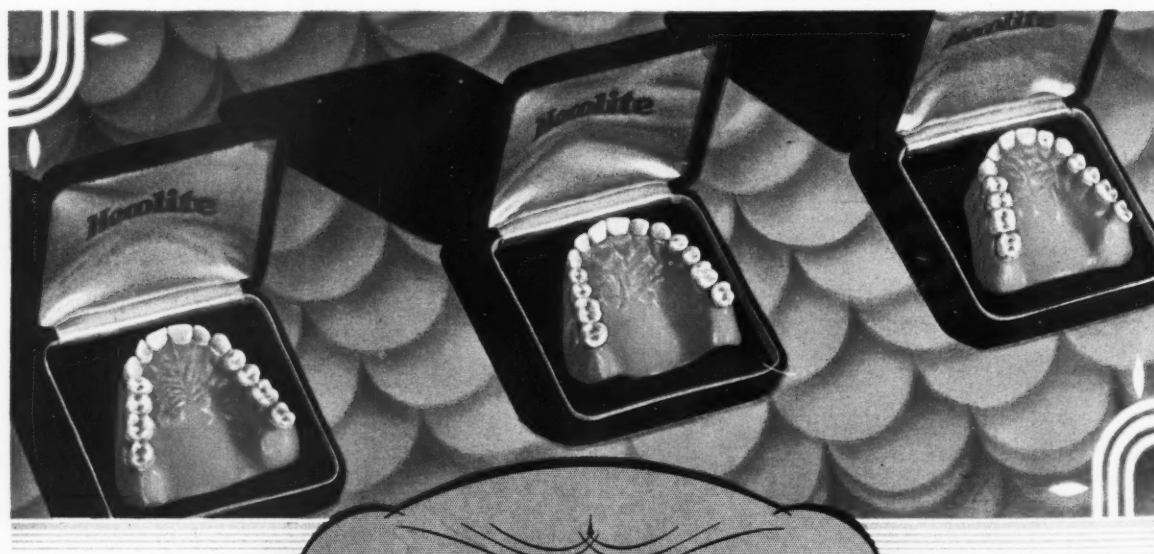
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The DENTAL DIGEST

VOLUME 38

August, 1932

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WAXING TECHNIQUE FOR REMOVABLE CASTINGS

BENJAMIN KROHN, D.D.S.

Chicago

REMOVABLE gold castings for partial denture restorations have been, and still are, a bugaboo to the average dental practitioner. The difficulties involved in the manufacture of gold castings are so grossly exaggerated that he fears even to attempt to conquer them.

Whether it is because of this attitude or the lack of time that the busy practitioner has for laboratory work, or because it is easier to send the work to a commercial laboratory, it is a recognized fact that the great majority of the dentists of today do not make their own cast gold removable restorations or skeletons for partial denture work. Practically all dentists, however, make their own wax patterns for inlays and three-quarter crowns; and cast gold skeletons, or combinations of bent wire clasps with cast bars and saddles, may be waxed up and cast as easily as inlays and three-quarter crowns and with no greater percentage of failures. If this statement is regarded from the economic standpoint alone, one may readily perceive the tremendous saving that can be made by not having to send this type of work to a dental laboratory. At the same time, the dentist has the satisfaction of knowing that his patient has a simpler, lighter, less cumbersome, and better restoration.

The waxing technique to be described may be mastered easily, requires no extra or unusual equipment, and can be done more easily and almost as quickly as waxing a three-quarter crown. The cases illustrated represent an average type lower lingual bar gold skeleton and an upper palatal bar skeleton. This technique of waxing will produce a smooth casting of a definite uniform thickness throughout, which may be easily finished and polished.

MATERIALS AND EQUIPMENT

1. Bunsen burner.
2. Wax carver or spatula.
3. Clasp pliers.

4. Brass sprue former (one-eighth inch round brass tubing).
5. Number 28 iron twist drill.
6. Casting flask.
7. Wax crucible former.
8. Millimeter rule.
9. Flexible sheet casting wax (22 and 26 gauge).
10. Wax eliminator.

TECHNIQUE FOR LOWER LINGUAL BAR CASE

1. Preparation of Teeth to Be Clasped—All teeth to be clasped should be slightly ground with a tapered carborundum stone in the region of the marginal ridge that is to support the occlusal rest. This in no way harms the tooth provided the operator does not grind through the enamel covering of the tooth. This will result in a stronger and more stable occlusal rest which will provide a much finer end-result.

2. Impressions and Model—The impression may be taken in any material and according to the technique at which the dentist is most proficient. The undercuts at the teeth to be clasped and the lingual bar area are relieved by scraping the impression.

The model is then run up in any compensating investment material, preferably one that will give a model of sufficient hardness to permit direct casting.

3. Designing of Denture—The denture should be outlined with a pencil in the following order:

A. Clasps: One should start at the marginal ridge and outline the clasps so that they go downward and forward just below the greatest circumference of the tooth, ending slightly beyond the center axis of the tooth, and stopping short of the gingival tissues. This type of clasp will give good retention, cause no gingival irritation, and will show a minimum amount of gold from the anterior view.

B. Lingual Bar Area: The bar should be designed so that the upper border will be approximately 2 mm. below the gingival roll of tissue. Care should be taken so that the bar will not impinge on the lingual frenum.

C. Saddle Area: The saddle should be designed so that it covers the crest of the ridge and extends even with the lower border of the bar on the lingual aspect and on the buccal so as not to impinge on any free muscles. The area is extended posteriorly as far as necessary to give stability and sufficient retention (Fig. 2).

4. Forming Sprue-Hole—A number 28 iron twist drill is placed in the dental lathe and a sprue-hole is drilled directly through the model at the center point of the intended lingual bar. The simplicity of a single sprue is one of the outstanding features of this technique. It has been found that the use of a single sprue of this diameter will be sufficient to cast almost any type of removable casting. The placing of the sprue in this manner provides the avenue of least resistance for the flow of gold. Immediately after the case is cast it has been found that this short sprue brings the button of excess gold so close to the casting that it acts as a reservoir to compensate for the rapid shrinkage of gold (Figs. 1 and 2).

5. Bent Wire Clasps—A round platinum or platinum alloyed clasp wire, 19 gauge, is used for anteriors; 18 gauge, for bicusps, and 16 gauge, for molars. The clasp wire is adapted to the abutment teeth. It is not necessary to spend much time in doing this as the clasps may be delicately adjusted in the mouth at a later date. These clasps are sealed to the model at the occlusal rest areas by means of hot, sticky wax.

The cardinal reasons for the use of this type of wire are (1) ease of manipulation; (2) a small amount of frictional area when the clasp is in contact with the tooth, thereby eliminating the possibility of abrasion and decay, and (3) a small display of gold (Fig. 3).

If the cast clasps are preferred, they may be waxed up according to the pencil outline on the model.

6. Lingual Bar—By means of a ruler and knife or wax carver a strip of flexible, 22 gauge, sheet casting wax is cut of suitable length for the lingual bar and wide enough to form a strip

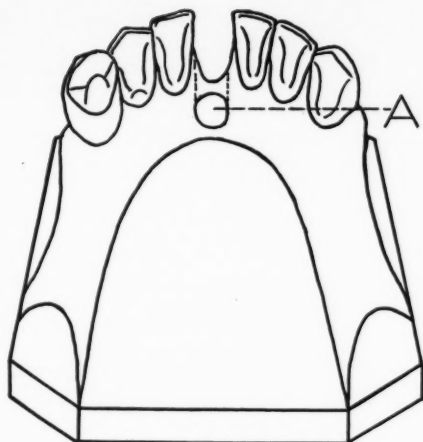


Fig. 1—Model for lower lingual bar before waxing. A, represents the single sprue-hole drilled directly through the model.

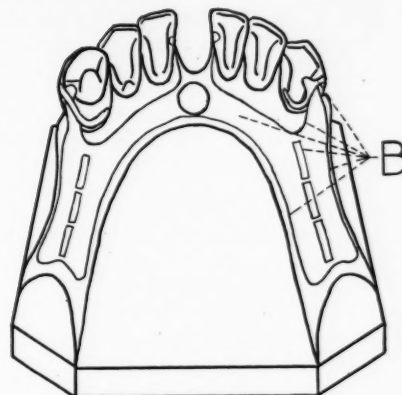


Fig. 2—Clasp, saddle, and bar design drawn in pencil on the cast (B).

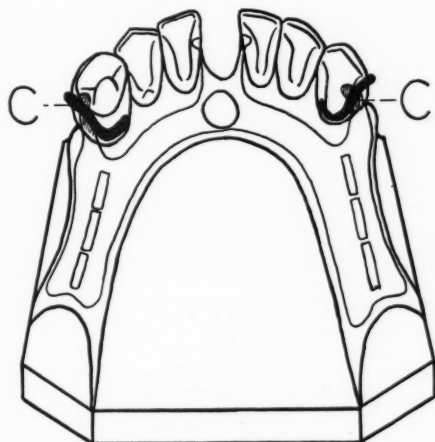


Fig. 3—Bent wire clasps adapted and sealed to the model (C).

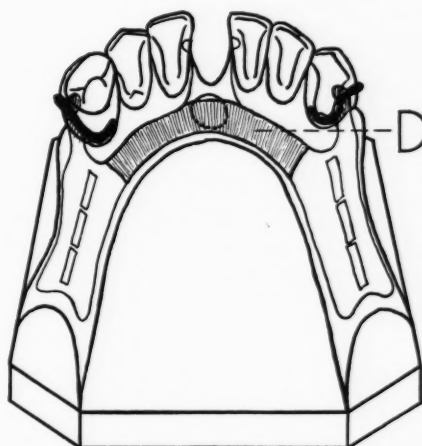


Fig. 4—Wax adaptation for lingual bar (D).

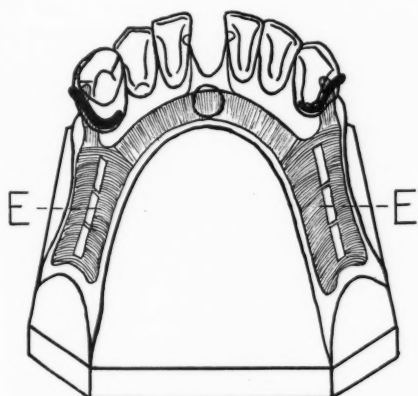


Fig. 5—Wax adaptation for occlusal rests and saddles (E).

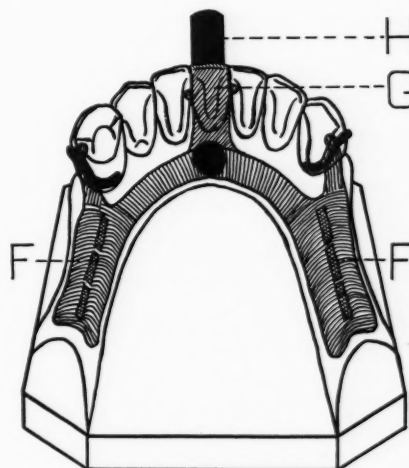


Fig. 6—F, retention lugs; G, anterior tooth being supplied; H, metal tubing sprue former.

4 mm. wide when folded double. With the thumbs of both hands the wax strip is pressed against the model following the pencil outline. The heat of the hands is sufficient to mold the wax perfectly to the model. The length of the bar is trimmed to suit the case (Fig. 4).

7. *Saddles*—A single thickness of 26 gauge wax is placed over the saddle area and with the index fingers of both hands the wax is adapted close to the model. With a sharp, slightly warmed, wax carver the wax is trimmed to conform to the pencil outline on the cast which will show through the transparent wax (Fig. 5).

8. *Occlusal Rests*—Molten wax is flowed from the saddles up over the clasps to form the occlusal rests. This should be waxed heavily so that the gold will cast completely around the clasps, thus insuring greater strength (Fig. 5).

9. *Burnishing Wax*—The saddles are connected with the lingual bar by burnishing from the bar to the saddle at the junction by means of the rounded end of a wax instrument that has been warmed just enough to soften the wax without melting or fusing it.

A good method for testing the proper amount of heat in the instrument is to be able to pass it over the palm of the hand without burning. This method of burnishing the wax gives a smooth joint of even thickness.

10. *Retention Lugs*—A strip of wax of single thickness, 26 gauge and 1½ mm. wide, is cut about three fourths of the length of the saddle. This strip is placed longitudinally along the crest of the ridge and each end is sealed to the saddle with a hot spatula. At intervals of 5 mm. the wax strip is touched to the saddle with a hot instrument. This is accomplished by heating the blade end of the wax instrument and quickly sealing the strip to the saddle. No extra wax is needed for this strip. After the sealed spots have cooled, a thin-bladed instrument is inserted beneath the strip between the sealed spots; the strip thus raised produces bridges for retention. As an additional retention measure the saddle area is scored along the buccal and lingual sides with a sharp instrument, care being taken not to cut through the wax (Figs. 6 and 7).

The saddles are now sealed with hot, sticky wax at the posterior ends to the model. This is done to prevent the saddles from raising off the models.

11. *Sprue Former*—A piece of one-eighth inch brass or aluminum tubing, from 1½ to 2 inches long, is heated and inserted into the sprue-hole pre-

viously drilled in the case until it passes just beyond the wax of the lingual bar. This produces a sprue-hole in the invested case which is of uniform smoothness and thickness and allows easy withdrawal of the sprue former. The end of the sprue former is sealed to the lingual bar with hot, sticky wax to prevent it from being dislodged (Figs. 6 and 7). The case is now completely waxed and ready for investing.

12. *Wax Crucible Former*—A wax sprue base or crucible former of ordinary pink base plate wax is now made by molding the wax over an ordinary inlay crucible former and cutting the wax to fit a large, galvanized iron casting ring. This base is sealed to the ring with the sprue-hole opening directly opposite the center of the crucible of the casting machine from which gold is thrown into the mold.

13. *Investing*—The excess of the model is cut away so as to make it fit the casting ring; the case is moistened in water. A coat of the same investment material as was used in making the model is painted over the waxing on the case and allowed to set. One should be sure to get the investment material under retention loops. The case is now placed in the ring with the sprue passing through the opening of the crucible former. The sprue is sealed to the crucible former and the ring is placed in a plaster bowl at about a 45° angle; then, some investment material is poured into the ring. This is done to prevent the case from being dislodged when the balance of investment is poured. After this has set the ring is placed in a vertical position and completely filled with the same investment material. The case is allowed to set for about forty-five minutes before one proceeds to eliminate the wax.

14. *Eliminating Wax*—The wax may be eliminated by either the low or high heat technique.

An ordinary electric stove with an inverted can with holes punched in the top makes an ideal and economic wax eliminator. This oven will furnish sufficient heat to eliminate wax from any type of case. Two hours is generally sufficient time to eliminate the wax.

15. *Casting*—A horizontal, centrifugal casting machine of the ordinary type is used. Any type of casting machine, however, may be used provided the flask used to invest the case properly fits that type of machine. Usually, it will be found that 8 dw. will cast the ordinary lingual bar with two clasps, and 10 dw. will be adequate in cases having more than two clasps and one or two backings. After the

casting has been done the case is allowed to cool for five minutes and then quenched by plunging the flask in cold water to prevent the gold from becoming brittle.

The investment is removed; the case pickled in acid, and the sprue sawed off.

If the case is cast to bent wire clasps, it is advisable to invest the entire case in soldering investment; the solder is allowed to flow around the junction of the wire clasps to the cast gold to insure a perfect union and provide suitable strength.

16. *Finishing and Polishing*—Any excess gold is trimmed with a carborundum stone, followed with a stiff lathe brush (wheel shape) and Tripoli to remove all scratches. The finishing is done with a chamois wheel and rouge. The inside of the clasps are polished with suitable polishing instruments.

TECHNIQUE FOR UPPER PALATAL BAR CASE

1. *Preparation of Teeth to Be Clasped*—The abutment teeth are prepared according to the technique described for the lower lingual bar case.

2. *Impression and Model*—The impression is relieved of undercuts at the teeth to be clasped. The palatal bar area should not be relieved because close contact between bar and tissues is desired. The model is run up in a suitable investment material.

3. *Designing of Case*—The case is outlined in pencil as shown in Fig. 9.

4. *Forming Sprue-Hole*—The same drill is used as has been described in the technique for the lower lingual bar case. A hole is drilled through the model in the center of the outline of the palatal bar (Fig. 8).

5. *Clasps*—The clasps are made according to the technique already described.

6. *Palatal Bar*—The palatal bar is next constructed by taking one thickness of 22 gauge sheet casting wax, large enough to reach from ridge to ridge, and by means of finger pressure adapting it to the palate following the outline for the palatal bar made on the model. The casting wax is extended from ridge to ridge and may be trimmed to form with a warm, sharp wax instrument. Another piece of 22 gauge wax is cut, one thickness, the size of the narrowest or central portion of the bar. This is pressed to place over the first piece of wax and by means of the rounded end of a wax instrument is burnished to the first piece of wax forming a smooth, even joint (Fig. 11).

7. *Saddles*—The saddles are next constructed by cutting out single



Fig. 7 (above)—Lateral view of case waxed on model. A, Sprue-hole drilled through model.

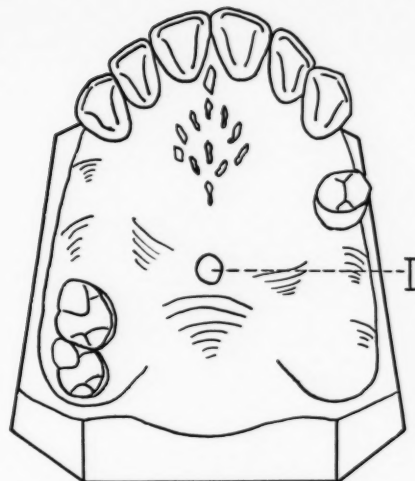


Fig. 8 (right)—Model for upper palatal bar with single sprue-hole drilled through the palatal surface of model (1).

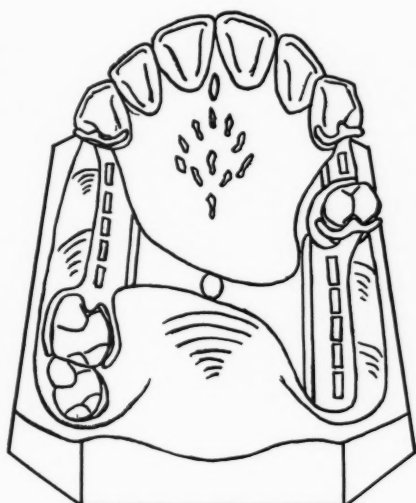


Fig. 9—Pencil design of case on model.

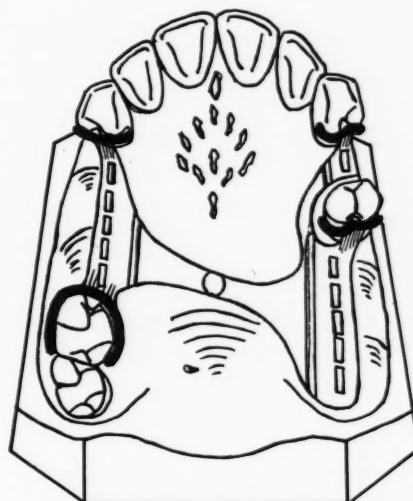


Fig. 10—Bent wire clasps adapted and sealed to model.

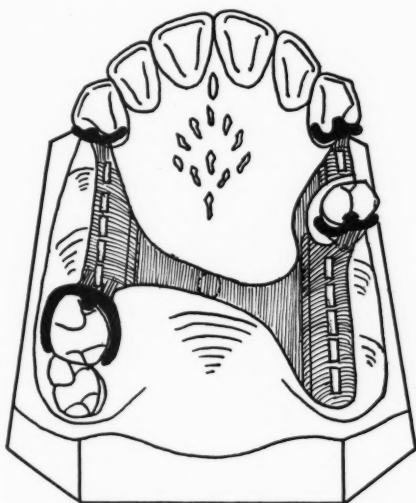


Fig. 11—Wax adaptation for palatal bar.

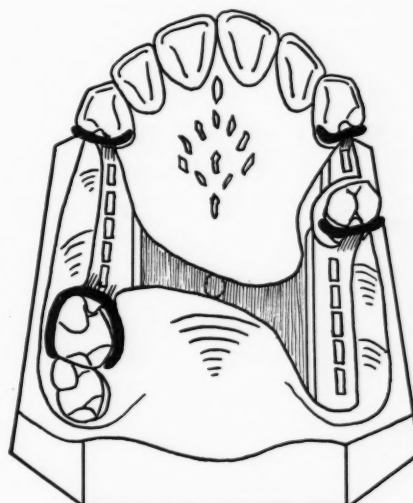


Fig. 12—Wax adaptation for saddles and occlusal rests.

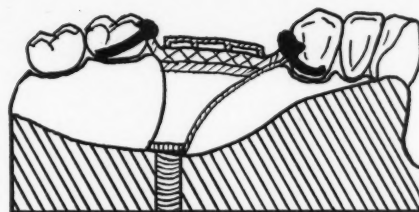
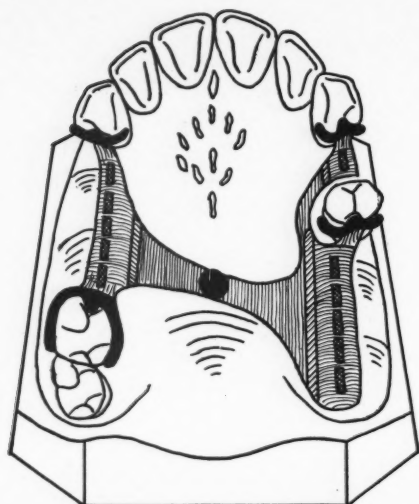


Fig. 13 (left)—Retention lugs and metal tubing sprue former.

Fig. 14 (above)—Lateral view of case waxed on the model.

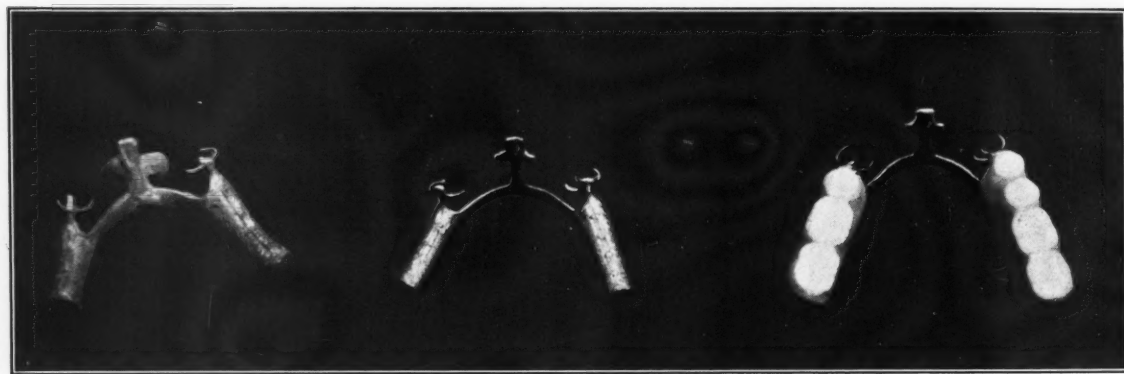


Fig. 15—J, rough casting. Note position of sprue former. K, casting polished and ready to receive teeth; L, completed case.

thicknesses of 26 gauge sheet casting wax and pressing them to place with the fingers over the ridge and then trimming the wax to conform with the pencil outlines on the model. The saddle areas are joined to the palatal bar already in place according to the technique previously described for burnishing (Fig. 12).

8. *Occlusal Rests*—The occlusal rests are waxed as previously described.

9. *Finishing Shoulder*—When vulcanite or some condensite is used in upper cases to fasten the teeth to the gold saddles, it is good practice to wax a definite line of demarcation, or finishing shoulder, between the gold and the vulcanite. This will result in a more finished and artistic case, and, at the same time, provide additional retention for whatever material is used. This may be accomplished by cutting a strip of wax (26 gauge), about one-sixteenth inch wide and of sufficient length to reach from the posterior end of the saddle to the anterior abutment, or from the posterior abutment to the anterior abutment as the case may present. This strip is placed on the lingual aspect of the

ridge, and the side nearest the center of the palate is burnished to the saddle. By means of a small, sharp instrument the opposite side, or side closest to the ridge, is raised, thus forming a V-shaped opening between the wax shoulder and the saddle. This may appear difficult at first but when actually attempted will be found comparatively simple.

10. *Retention Lugs*—The same type of retention lug is employed as described for the lower lingual bar case.

11. *Sprue Former*—The same sprue is used as in the lower lingual bar case. The end of the sprue is heated and inserted in the sprue-hole and allowed to press through the wax of the palatal bar. The sprue is sealed to the model to prevent its being dislodged.

The investing, wax elimination, casting, polishing, and finishing are all done according to the technique already described here for these processes.

CONCLUSION

The technique described in this article results in a case (1) from 25

to 50 per cent less in weight than the average laboratory case; (2) the case is less bulky in the patient's mouth, and is (3) of ample strength. (4) There is a saving of from 25 to 40 per cent gold on each case by the use of this technique. This economy of money and time, plus the advantage obtained from a lighter, less bulky case of simple construction with a success of almost 100 per cent, makes this technique an ideal one for the general practitioner of today.

TABLE OF GAUGES

Table of Waxes		
Lower Lingual Bar:	Thicknesses	Gauge
For bar	2	22
For saddles	1	26
For lugs	1	26

Table of Wires

For:	Gauge	Kind
Anteriors	19	platinum, round
Bicuspsids	18	round
Molars	16-18	round
Palatal Bar:		
	Thicknesses	Gauge
For center of bar	2	22
For wide portion of bar	1	22
For saddles	1	26
For retention lugs	1	26

TABLE SHOWING AMOUNTS OF GOLD

For:	Amounts
1. Simple lingual bar	8 dwt.
2. Complex lingual bar	10 dwt.
3. Palatal bar case	14 dwt.

The Editor's Page

DENTAL historians may record the epoch of the depression years as the period of the Rise and Fall of the Display Advertising Movement in the United States. The movement was started by dentists of good intention who believed that the secret of economic and professional success might be solved when the public was addressed directly in the interests of dental health through the medium of newspaper advertising space. These men honestly believed that, in a high-gear economic society where merchandise and services were sold with success by well directed advertising, it was necessary for the dentist, if he were to compete with these other businesses for the wage-earner's dollar, to adopt the same technique. In short, if shoes and soap, radios and real estate, vacuum cleaners and vacations could be sold by intensive advertising why, then, should not dentistry be sold by the same method?

At no place along the line in the discussion of this subject should we forget that the men who sponsored this experiment were acting in anything but the best faith. Their sincerity and integrity is unquestioned; their courage to fly in the face of professional traditions and "antiquated ethics" is admirable. We question, however, their judgment and the soundness of their premise.

First, it must be rigidly kept in mind that dentistry is a profession. For nearly one hundred years we have fought the good fight for public recognition as a profession. We have striven for recognition, not as merchants or mechanics, but as professional men. That is, dentists are persons of intensive, specialized training; their services are person-to-person; the profits from their labors are secondary to the services performed. Unlike the motive of business, gain or profit is not the one and only consideration of the professional man. Business exists for profit with a secondary emphasis on service; a profession exists for service with the secondary emphasis on profit. To be sure, business men may often be professional in the best sense but, unfortunately, professional men are sometimes business men in the worst sense.

Whenever the public pigeonholes the professional man as a person-for-profit only, he loses the public's confidence and places himself in jeopardy. Long-term economic reward for the dentist is more likely to follow in the wake of professional integrity than after the reputation for business acumen. In a few words: It is to our *economic* advantage to maintain our professional status. Anything that may endanger that status is undesirable and this includes whatever may tend to associate our services in the public mind with the technique of merchandising. Display advertising casts us in the category of merchants, far afield from the professional ideal.

Secondly, the proponents of display advertising emphasize that only 20 per cent of the population have dental services performed. They argue that the other 80 per cent are "dentally ignorant," and that all that is needed to set up an unending stream of patients to the dental office is a method of advertising. Curiously enough, in few other fields has so much money been spent in the last ten years as by the dentifrice and mouth wash manufacturers who have made strenuous efforts to make the public "dental-minded." Consider the widespread reciprocal, third party advertising that these manufacturers have given the profession and then try to determine how any campaign by the profession could do more to overcome "dental ignorance." The plain fact is that people would rather spend their money in pleasurable pursuits than in unpleasant ones (the radio, automobile, etc., versus dentistry); that we are all fearful in varying degrees of the dental experience; and, finally, that many persons in the 80 per cent group cannot afford dentistry.

The third argument against the theory of display advertising is unanswerable. Advertising to the general public on a national scale costs large sums of money. An inadequate expenditure would fail of its purpose, be lost in the mass of advertising reaching the public. The dental profession, even if it were willing to enter the ranks of commercial advertisers, lacks the money to do so. Raising fees to get it would be uneconomic.

SURGICAL TRAUMA OF THE MANDIBULAR CANAL

WILTON W. COGSWELL, D.D.S., F.A.C.D.

Colorado Springs, Colorado

THE frequent occurrence of postoperative anesthesia following the removal of the mandibular third molar suggests lack of study regarding the relationship of the inferior dental canal to the lower third molar. Anatomic variations found in this region are so numerous and may present such complicating factors in the operative procedure for the removal of this tooth that a more accurate interpretation of the roentgenogram is imperative if the number of prolonged or permanent cases of postoperative anesthesia is to be materially reduced. The widespread acceptance of a theory that assumes an assured regeneration of the inferior dental nerve in the event of a traumatic injury, resulting from the removal of the third molar, has essentially increased such occurrences. Such a theory is unquestionably in error, as investigation has definitely proved, for one is confronted with many unfortunate cases of anesthesia of from two to ten years' standing.

Functionally the inferior dental nerve is presumably purely sensory; yet in a fair percentage of these cases of permanent anesthesia a slight temporary impairment of a motor function is observed. It may, therefore, be concluded that the nerve is not always purely sensory but may in some instances include fibers of motor function, which will add to the embarrassment of both patient and operator should surgical intervention for the removal of a tooth result in nerve trauma and functional impairment.

Cases of possible nerve involvement should be suggested by the roentgenogram when the shadow of any portion of the tooth substance is superimposed on the shadow of the mandibular canal. Not all roentgenographic exposures display the continuity of the root canal within the tooth

as they should. In the case of deeply impacted or unerupted teeth the exposures should be repeated until the anatomic relation of the tooth to the mandibular nerve is unquestionably established by aid of well defined root canals. As occlusal roentgenograms of the third molar region are too greatly limited in definition of shadow contrast, because of the extensive mass of intervening tooth and osseous substance, one is forced to interpret the anatomic relation between tooth and mandibular nerve from several lateral angles of exposure.

Generally speaking, this is accomplished by accurate interpretation of the continuity of well defined root canals displayed in various roentgenograms. By this method root curvatures are readily distinguished, as any marked deviation of the root will obliterate the root canal if such a curvature is toward the buccal or lingual aspects. It is with these marked buccal or lingual deviations of root form that we are most concerned here. A mesial or distal curvature is readily recognized by the outline of both the root and the root canal.

From a study of roentgenograms and surgical observations remarkable anomalies are known to occur in the anatomic form of lower third molars and the adjacent inferior dental canals and the relationship existing between them. It is not uncommon to find the substance of the tooth developed in form to accommodate the passage of the inferior dental nerve, either through its body or by way of a well defined groove or shoulder in one of its lateral surfaces. Neither is it uncommon to find the nerve resorting to acute curves in its progress to conform to the body of an impacted tooth or to root curvature. The developmental adaptability of the harder tooth substance to the mandibular

nerve canal and the angle of progress of the nerve through the mandible to conform to the tooth are two things to be wondered at from a physiologic point of view, and to be seriously considered from a surgical aspect.

Clinically, with such teeth removed, a large majority of tooth sockets will display a portion of the nerve canal well defined both in color and tissue, either at the base or on one of the lateral surfaces. The canal may be seen passing along the wall of the tooth socket, often its full length, or actually through a portion of the socket space. Frequently, the canal appears as a conduit, supported by a frail osseous mesio-distal bridge, passing through the center of the space formerly occupied by the roots of the tooth when these roots have bifurcated to permit one part to assume a position on each side of the nerve. While this relation is perhaps the one most commonly found, the straddling of the nerve by the tooth usually consists of only a groove or channel along the base of the tooth through which the upper portion of the canal passes. The possibility of a complete bucco-lingual encircling of the canal is always present, and in rare cases, a complete fusion of root substance at the apexes of the two lateral roots.

In the accompanying illustrations are shown roentgenograms and models of six types of unerupted and impacted lower third molars that presented grave possibilities of mandibular nerve involvement from surgical trauma in their removal. These and similar molars were removed without prolonged postoperative anesthesia or other unusual disturbances other than some increase in postoperative pain.

The roentgenograms are shown from the buccal aspect to facilitate comparison with the models. The

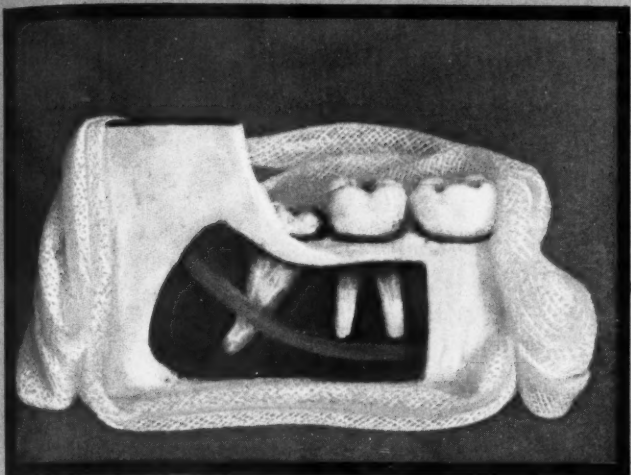


Fig. 1—Horizontally impacted third molar with root apices contacting the mandibular canal at the distal surface.



Fig. 2—Horizontally impacted third molar with inferior root in greater contact with a mandibular canal that has formed an accommodating curvature to the form and position of the tooth.

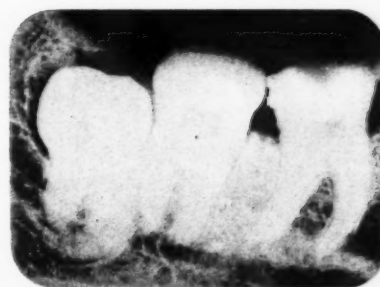
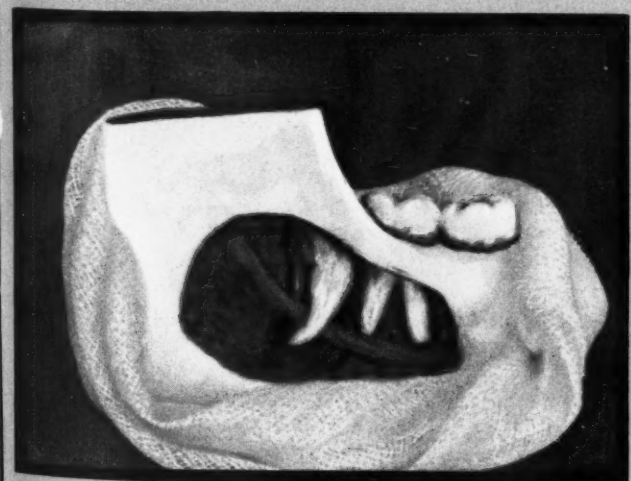


Fig. 3—Deeply impacted lower third molar conforming in root curvature to the mandibular canal with which its entire length is in contact.

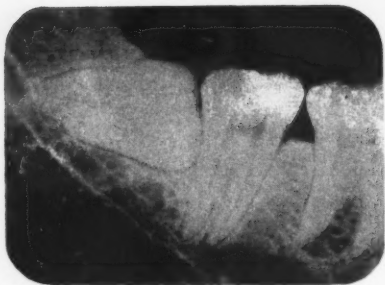


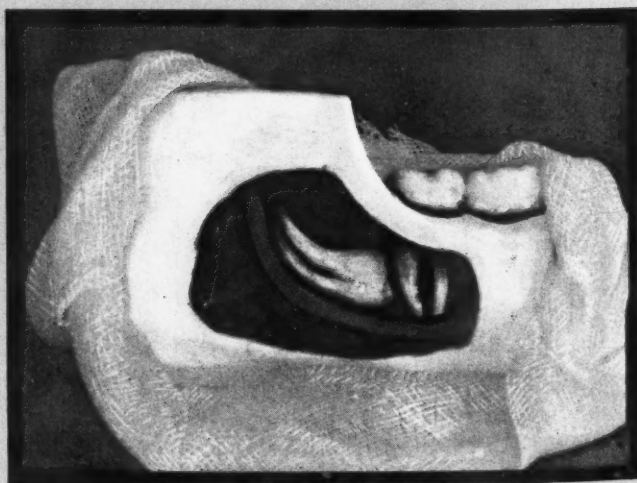
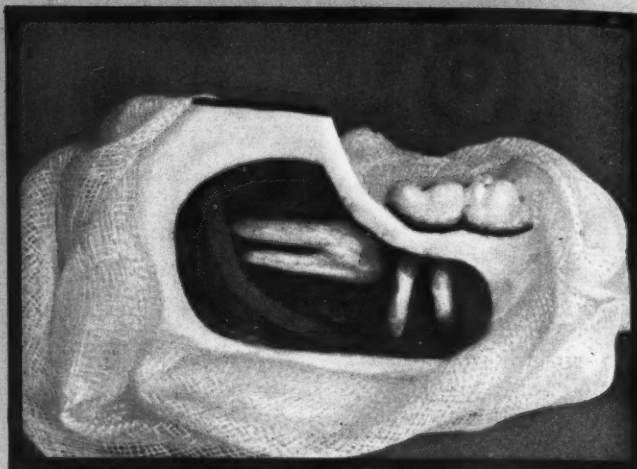
Fig. 4—Unerupted lower third molar extending well below the mandibular canal which passes through a channel in the buccal surface of the root.



Fig. 5—Unerupted lower third molar having a root curvature extending distally and buccally partly to encircle the mandibular canal.



Fig. 6—A perpendicular unerupted lower third molar presenting a buccal and a lingual root encircling the mandibular canal without fusion of root substance at their apices.



models are from the buccal aspect with a portion of the ramus dissected for the purpose of disclosing the anatomic relation between the unerupted third molar and the inferior dental canal. Upon inspection of these illustrations it must not be thought that only unusual types are shown for such cases are commonly encountered.

TYPES OF UNERUPTED AND IMPACTED LOWER THIRD MOLARS

In Fig. 1 is shown a common type of horizontal, impacted lower third molar with the mandibular canal passing downward in contact with the root apexes before it curves forward through the body of the mandible. Should excessive pressure be applied to remove this tooth as a whole from its socket, it would necessitate movement of the tooth to the distal for a space of several millimeters before the inferior cusps of the impacted crown could clear the distal surface of the second molar. Such a movement would badly traumatize the inferior dental nerve. In cases in which close proximity of the nerve to the root apexes is suggested, surgical division of the tooth is required to limit the movement of the root in a direction away from the nerve.

In Fig. 2 the mandibular nerve and the tooth substance conform to each other. In such a case there is a combined danger from tooth movement toward the distal and the possibility of a groove in the inferior surface of the impacted tooth further complicating the operative procedure.

Fig. 3 displays a deeply impacted tooth conforming in its entire length to the mandibular canal curvature. Were it possible to gain access to the under surface of such a tooth with instruments, for the purpose of elevating it from its position, the result would no doubt be extensive mutilation of the nerve. When careful division is resorted to, and the tooth is removed, the mandibular canal may be observed for the major portion of the socket.

In Fig. 4 is seen an unerupted third molar at only a slight angle of impingement against the second molar; yet the single root extends downward well past the mandibular canal and conforms to it with a well developed shoulder of root substances. Roentgenographic evidence of such types is

repeatedly seen, but to determine the exact bucco-lingual relation between tooth and nerve is difficult; therefore, in all such cases, operation must be done with proper caution.

Fig. 5 shows an apical curvature of the root which passes laterally under the mandibular canal to a degree prohibiting the movement of the tooth as a whole from the socket without certainty of nerve severance and post-operative anesthesia. The correct removal of such a tooth demands tooth division of the entire root body as well as of the crown.

Finally, in Fig. 6 the inferior dental nerve is shown passing between the buccal and lingual roots of a third molar. There is not a complete fusion of the root apexes but only slight contact between them. While in these cases there is, in a sense, a complete circling of the canal by tooth substance, nevertheless, from an operative standpoint, the removal of such a tooth without nerve trauma is possible.

The surgical problems presented by such anatomic relations of tooth to nerve as shown in these illustrations must be solved by the application of the laws of physics if nerve trauma is to be avoided. First, it must be remembered that the osseous substance surrounding the roots of impacted lower third molars is composed, principally, of a softer cancellous bone substance. The ease with which tooth movement may be accomplished is determined mainly by the type of medullary spaces and bone density. The walls of the mandibular canal offer no resistance to encroaching operative pressure. Recognition of the fragile type of osseous substance surrounding the mandibular canal precludes the use of forceful movement of the tooth from its impacted position. Were force to be used, and some of the many anomalies in root form to be present, trauma of nerve fibers would result, or possibly complete severance of the nerve. Tooth division should be resorted to at once when roentgenographic evidence indicates close proximity of the nerve.

TECHNIQUE

The principle of tooth division is to establish space within the tooth itself for movement of a portion of the tooth. This necessitates the use of a bur, such as a number 703 crosscut

fissure bur, for the division of the tooth, because the mere fracturing of the tooth substance with a chisel will not create available space.

The angle of tooth division for the relief of nerve impingement is definitely established by the long axis of the mandibular nerve itself, and as its direction is mesio-distally through or past the tooth, the division of the tooth should be made mesio-distally. As the anatomic relation of the tooth to the nerve may be either to one side or to both sides, the danger of severing the nerve by instrumentation is obviated by a mesio-distal division of the tooth. Mesio-distal tooth division is confined principally to the body of the root portion, because the impinging portion of the crown should first be removed.

The base of the pulp chamber is thus left as a further guide to mesio-distal division. Should a bifurcation of the root be indicated by the roentgenogram, a further check may be made by means of a broach passed into the individual root canals to determine the angle of bifurcation. The divisional cut should at all times be made through the center of the root body and extended toward the root apexes only to the actual bifurcation.

In large, massive, single-rooted teeth the divisional cut may extend well into the root body toward its apex. When the mesio-distal divisional cut is correctly made, fracture of the remaining portion, or the united portion of two roots, may be accomplished by rotating a thin-bladed instrument in the space thus created. With the roots or the body of a root thus severed, one portion may be easily removed, ample room being given for the removal of the balance without excessive pressure.

CONCLUSION

Surgical intervention for the removal of deeply embedded tooth substance requires constant vision, which may be maintained only with the use of a suction-tip. Sponging is inefficient and obliterates the outline of tooth substance by forcing debris deeper into the field of operation.

Recognition of anatomic variations in the relation of the mandibular canal to the lower third molar, and cautious surgery in the removal of the tooth will eliminate a majority of cases of postoperative anesthesia in this region.

PROFILE RADIODONTIA

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RADIODONTIA has assumed an important and valuable position, that of an exact science, because it portrays and records the pathologic conditions of the area within or beneath the surface tissues of the oral cavity. With its recognized means of expression, radiodontia indicates the necessity for surgical intervention, and is of equal value in picturing the natural and normal conditions when surgical intervention may be avoided with safety.

Radiodontia affords a means of recording with scientific accuracy achievements in the practice of dentistry. Radiodontia has made many notable discoveries in the field of dental research and is continually working for those even greater triumphs that the future seems to hold.

Besides the usual intraoral, periapical radiodontic survey there are other projections of the roentgen rays which are extremely valuable to the dental profession, chief among which are those required in profile radiodontia.

THE DENTAL PROFILE

The dental profile and the physiology of man as a whole are gradually changing from the types that heretofore have represented the different racial countenances to those that have been brought about by intermarriage, mental development, and physical degeneracy.

The profile may be classified into three types: (1) the straight profile, (2) the convex profile, and (3) the concave profile.

The study of the profile presents three high points for consideration: (1) the frontal sinus, (2) the tip of the nose, and (3) the point of the chin; and two low points: the orbital and sublabial.

The upper half of the profile, or that portion of the face between the frontal sinus and the tip of the nose, is not subject to great change. Such factors as the extraction of the teeth, especially when an alveolectomy has been performed; the regulation of irregular teeth; trauma; surgical operations, especially surgical operations on certain forms of harelip and cleft palate; extended mechanical abrasion of

the occlusal and incisal surfaces of the teeth; and the slow, insidious resorption of the alveolar process—all have a tendency to bring about a change in the maxillo-mandibular relationship, which results in altering the facial expressions.

A wide variety of changes is to be found not only in the lower half of the profile, or that portion between the tip of the nose and the point of the chin, but also in the upper half. This is because the muscles located around the mouth are so closely interrelated with those between the tip of the nose and the eyes that any change in the muscular displacement about the mouth may cause a difference in the facial expression about the eyes.

It must be apparent, then, that the restoration of a patient's original profile is an important factor. Any positive data, such as records of the outline of a patient's natural, life-size profile and of the normal facial curves and features, will become valuable because they offer a definite means of relocating and reestablishing the original distance between the three high points of the profile.

PROFILE ROENTGENOGRAPHY

Profile roentgenography is the science and art of portraying and recording upon a sensitive photographic emulsified film, with the use of the roentgen rays and x-ray apparatus, the soft tissue contour and detail of the profile and its osseous understructure. Profile roentgenography denotes the relationship of the tissues to each other in forming the natural facial curves and features.

Profile roentgenography is divided into two separate and distinct sections; namely, the profile roentgenogram and the roentgenographic profile templet.

PROFILE ROENTGENOGRAM

The profile roentgenogram is the result of lateral posing and the application of the roentgen rays to the side of the patient's head and face upon which is superimposed a photographic emulsified film.

The profile roentgenogram is a combination or composite roentgenogram

portraying a complete outline of the side view of the soft tissue detail and the osseous understructure of the patient's head, and their relation to each other in forming the patient's natural profile and facial curves and features. These are represented on a single x-ray film and produced by a single exposure.

There are three separate and distinct types of profile roentgenograms: namely, profile roentgenograms of the soft tissue, profile roentgenograms of the osseous tissue, and composite profile roentgenograms.

1. Soft Tissue Profile Roentgenogram—The profile roentgenogram of the soft tissue presents the finest type of contrast and a complete side view outline of the soft tissues forming the head and face, and enough of their osseous understructure to determine the relation of the soft and osseous tissues to each other in presenting the natural facial curves and features.

2. Osseous Tissue Profile Roentgenogram—The profile roentgenogram of the osseous tissue is a combination or composite roentgenogram portraying a side view outline and detail of the osseous tissues forming the osseous understructure of the head and face, and denotes the relation of the osseous tissue to the soft tissues of the face. It is obtained by superimposing a roentgenogram picturing the finest type of detail of the osseous tissues forming the side of the head and face over a roentgenogram depicting the contrast of the soft tissues forming the profile.

3. Composite Profile Roentgenograms—Composite profile roentgenograms are obtained by superimposing a roentgenogram picturing the finest type of detail of the osseous tissues forming the side of the head and face over a roentgenogram depicting the contrast of the soft tissues forming the profile.

Roentgenographic Profile Templet—The roentgenographic profile templet is formed by cutting around the outlines of the profile roentgenogram of the soft tissue contour. The anterior or lateral black border becomes a templet and forms an exact life-size, individual, personal measurement for determining the distance between the

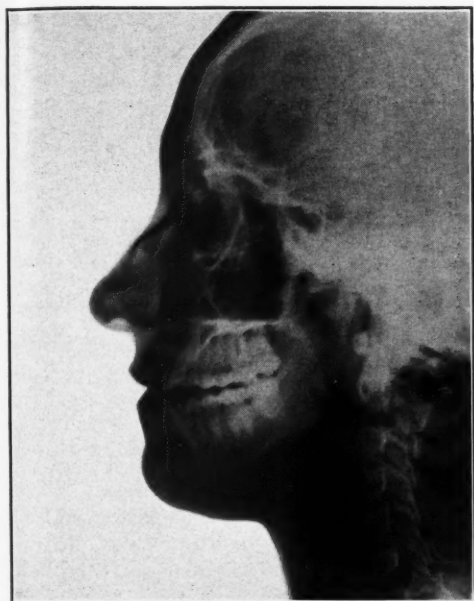


Fig. 1—Dental profile roentgenogram.



Fig. 2—Soft tissue profile roentgenogram.

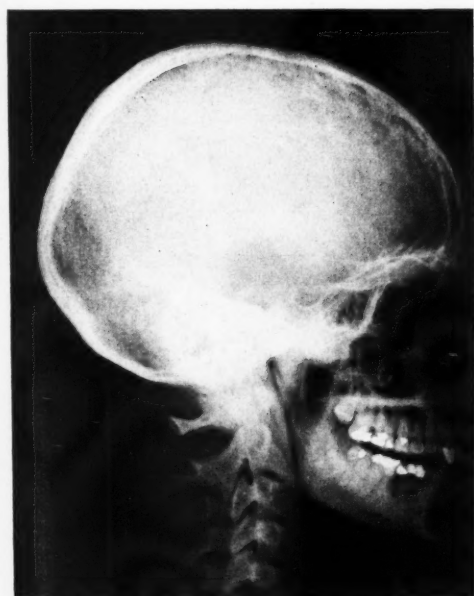


Fig. 3—Osseous tissue profile roentgenogram.



Fig. 4—Composite profile roentgenogram.

three high points of the patient's profile in order that the facial curves and features may be relocated, reestablished, or improved.

UTILITY OF PROFILE ROENTGENOGRAPHY

By profile roentgenography one can obtain a complete outline of the soft tissue contour of the face with enough of the underlying osseous structure to determine its relation with the natural facial expression. Profile roentgenography constitutes a means for portraying, recording, and measuring the profile at rest in order that the facial expression of the patient may be improved or reestablished. It also aids in the detection of any facial disfigurement not only of the teeth and alveolar process but also of the cartilaginous tissues of the nose; it portrays: the extent of fractures of the nasal arch; benign or morbid growths; the presence of foreign bodies within the soft tissues forming the nose; or any other disfigurement which might be presented for improvement or correction by the general surgeon, the plastic surgeon, the dental surgeon, the orthodontist, or the prosthodontist.

WHEN TO OBTAIN PROFILE ROENTGENOGRAPHIC DATA

Profile roentgenographic data should be obtained before all of the opposing natural teeth have been removed in order that the patient's profile may show the normal distance between the three high points of the dental profile, and so that the most successful esthetic results, as well as the greatest degree of efficiency and accuracy, may be attained.

ADVANTAGES OF PROFILE ROENTGENOGRAPHY FOR THE ORTHODONTIST:

1. Portrays for the orthodontist any facial disfigurement that may be presented for improvement, in addition to the side view outline of the soft tissue detail and its osseous understructure and their relation to each other in forming the natural facial curves and features.

2. Offers a method of determining the size and shape of the patient's head, face, and profile, and the distal position of the chin.

3. Also presents a side view record of the size and shape of the maxillary bones; the length, shape, and inclination of the anterior teeth and their incisal edge and overbite in centric occlusion; the cusps, crown, and roots of the posterior teeth in their mesio-distal relations; the mesio-distal relations of both the superior and inferior dental arches; the space occupied by the periodontal membrane; the lamella enveloping the roots of the posterior

teeth and their supporting tissues, and the tissues forming the adjacent areas.

4. May show the presence of the first permanent molars with their interdigitating cusps forming the keystone of the dental arches and the areas anterior and posterior to them; the presence or absence of all regular, irregular, nonerupted, or supernumerary posterior teeth and their relation to the skull; the profile roentgenograms furnish a method of determining whether an abnormality or lack of facial balance is self-corrective or may become more complicated as time progresses.

5. The orthodontist may detect such potent factors as nasal obstructions; the consequence of disuse, such as total loss or lack of occlusion of the posterior teeth; and the peculiarities and abnormalities of lip formation and lip pressure, causing a lingual inclination of the anterior teeth and an end-to-end bite.

6. The profile roentgenogram presents a method of determining whether the anterior teeth are aligned in natural protrusion or have been brought forward by thumb sucking or through the effect of breathing through the mouth.

7. Profile roentgenography assists in determining the perplexing problems caused by transposed teeth which have their bearing on malocclusion; the premature extraction or prolonged retention of posterior deciduous teeth; the infra-occlusion of the centrals; and the effect of posterior artificial crowns and fillings on malocclusion.

8. With progressive profile roentgenograms taken periodically the orthodontist and the patient's family and friends can easily detect the beneficial effects on the patient's facial features. Profile roentgenograms will also afford a more efficient and dependable method of interesting new orthodontic patients who are more familiar with negatives and pictures than with plaster casts.

9. Templets made from time to time from roentgenograms are extremely useful to the orthodontist because they put at his command a definite check-up on profile appearance, especially in the case of marked protrusive bite.

10. Templets made from progressive roentgenograms of a completed orthodontic case, starting with the first profile roentgenogram taken before the orthodontic treatment began and superimposing the later ones in regular sequence, will prove a dependable and interesting method of recording the achievements made in this particular branch of the dental science.

ADVANTAGES OF PROFILE ROENTGENOGRAPHY FOR THE PROSTHODONTIST:

1. Portrays an outline of the patient's dental profile at rest; furnishes a means for determining the approximate age of the patient; an accurate and dependable means for recording the size and shape of the head; the frontal and mental eminences; the size, shape, and base of the nose; and the size, shape, and position of the chin.

2. Furnishes a means of recording the soft tissue detail and its osseous understructure and their relation to each other in forming the facial curves and features or any disharmony of facial balance, such as harelip or cleft palate.

3. Affords a method of depicting the side view outline of the maxillary bones; the mandible; the rami; the condyle and glenoid fossa and their temporo-mandibular relationship and the relation to the naso-auditory meatus; the dental arches; the natural length and position of the anterior teeth, and their labial pitch and overbite in centric occlusion; the presence or absence of all regular, irregular, nonerupted, supernumerary, or impacted, posterior teeth, and their development and mesio-distal relation; the line of occlusion; Spee's curve; the shape, length, and thickness of the lips at rest, and their relation to each other, to the teeth, and to the line of occlusion and the dental profile on each side of the head and face.

4. Presents a method of recording a side view outline of the structural pattern of the alveolar process as well as the tissues that are to support artificial dentures. It affords a means of determining the necessity for an alveolectomy; denotes the extent to which the alveolectomy should be practiced, and gives a side view outline of the raphe in edentulous mouths when developed to the extent of an obtrusive osseous tumor.

5. Assists the prosthodontist in such perplexing problems as restoring any lack of balance or harmony of the patient's facial features to the original, natural position, or to a more agreeable and pleasing relation; and, further, to determine whether the deformities of the natural teeth may add to the difficulties of using artificial substitutes.

6. When equipped with an accurate and dependable means of measuring the distance between the three high points of the dental profile, the prosthodontist can take into consideration the natural progressive resorption of the alveolar process. The natural re-



Fig. 5—Roentgenographic profile templet.



Fig. 6—Orthodontic profile roentgenogram taken before orthodontic treatment began.

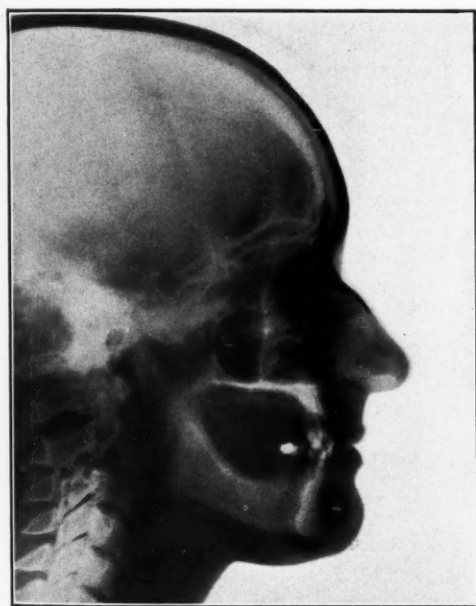


Fig. 7—Prosthodontic profile roentgenogram taken before all opposing teeth were extracted.



Fig. 8

Fig. 8—Prosthodontic profile roentgenogram of an edentulous mouth.



Fig. 9

Fig. 9—Prosthodontic profile roentgenogram taken after the insertion of artificial dentures.

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sorption of the alveolar process takes place so slowly that often there is a considerable change, or shortening of the maxillo-mandibular relationship. This results in the loss of facial expression and loss of efficiency in mastication before it is realized by the patient or his family or friends. The loss, however, may be detected by the use of the roentgenographic profile templet. Any departure from the nor-

mal may be revealed even months or years after artificial dentures have been inserted.

7. The profile roentgenographic templet furnishes the prosthodontist with the means for measuring the profile in the forming of bite-rim blocks, in such a way as to render it surprisingly easy to reestablish and relocate the natural maxillo-mandibular relationship. The templet also helps to

restore the labial pitch and overbite in centric occlusion of the patient's natural anterior teeth.

The sagging of tissues and disproportion of the facial curves are thus avoided, and the finer artistic development in correcting, improving, and restoring the patient's profile and facial characteristics are accomplished with dentures that are gratifying both to the patient and to the operator.

A WORKABLE DIETARY TABLE

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SOME of the more common foods are grouped in Table 2 according to their place in the normal diet; the average helping; the approximate caloric value, and the vitamin content. The vitamin content is given arbitrarily in terms of units. Each unit of a given vitamin represents one thirtieth of the amount of that vitamin needed by the average person daily to furnish that accessory food factor needed to maintain normal health; therefore, any daily ration selected containing the caloric requirements for a given person and at the same time showing a total of thirty or more units of each vitamin will furnish the necessary food elements to maintain health and incidentally provide for healthy teeth and oral tissues. It is a singular fact that the foods that have high vitamin values also have large mineral ash content which is so necessary to build and maintain teeth and bones. If the diet is based on three meals a day, any well balanced individual meal should show one third of the daily total in each column given in Tables 2 and 3.

The average daily rations shown in Table 3 for a moderately active man consuming about 3,000 calories shows 10 or more of these arbitrary vitamin units in each of the three vitamins per meal or 30 or more units of each vitamin per day.

It is not imperative that each meal have at least 10 units of each vitamin so long as any deficiency of a vitamin in any one meal is made up in another meal that day; that is, the orange could be taken away from the breakfast which would leave a deficiency of 9 units of vitamin C in the balance of that one meal only, provided the orange is put back into the diet at noon to make up the deficiency. Almost any diet can be balanced so far as these three vitamins are concerned by the addition of cod liver oil, halibut liver oil, viosterol, spinach, yeast, tomatoes, or any one of several other foods rich in some particular vitamin, many of which are shown in Table 2.

What the daily intake of the various vitamins should be was arrived at only by animal experimentation. Rats,

TABLE 1—AVERAGE DAILY CALORIC NEEDS

MEN	Calories	WOMEN	Calories	CHILDREN (Ages)	Calories
Active muscular.....	3800	Active.....	2800	From 1 to 1½ years.....	1000
Moderately active.....	3000	Moderately active.....	2250	From 3 to 4 years.....	1300
Sedentary.....	2500	Sedentary.....	2000	From 5 to 7 years.....	1600
Fattening sedentary.....	3500	Reducing.....	1100	From 8 to 10 years.....	1900
Reducing.....	1500	Fattening.....	3000	Boys about 16 years.....	3000
Aged.....	1600	Nursing mother.....	3600	Girls about 16 years.....	2400
		Aged.....	1600		

TABLE 2—FOODS

PROTEIN FOODS:	Average Portion	Average Calories in Average Portion	Vitamin Content in Units of 1/30 of the Average Requirement		
			Vitamin A	Vitamin B	Vitamin C
Beef, lean.....	4 ounces	200	1	1	1
Pork, lean.....	4 ounces	300	1	1	1
Pork, fat.....	3 ounces	300	1	1	1
Pork, salt.....	2 ounces	400	—	—	—
Veal.....	4 ounces	150	1	1	1
Mutton.....	3 ounces	200	1	1	1
Chicken.....	4 ounces	125	1	1	1
Turkey.....	4 ounces	325	—	—	—
Canned Meats.....	3 ounces	200	—	—	—
Fish, fresh.....	6 ounces	100	2	1	—
Fish, canned.....	4 ounces	200	1	1	—
Fish, salt.....	4 ounces	200	—	—	—
Eggs.....	2 ounces	150	6	6	—
Beans, navy.....	5 ounces	200	3	6	—
Beans, lima.....	½ cup	125	2	4	—
Peas.....	½ cup	125	3	6	—
Cheese.....	1 ounce	110	1	1	—
Liver, raw.....	4 ounces	200	10	6	6
Brains.....	4 ounces	200	6	6	—
Sweetbreads (thymus).....	4 ounces	150	2	1	—
Milk, whole, June.....	1 glass	100	6	2	2
Milk, whole, winter.....	1 glass	100	1	1	1
Milk, skimmed.....	1 glass	60	1	2	1
Milk, condensed.....	4 tablespoons	100	2	1	1
Milk, condensed, sweetened.....	4 tablespoons	200	2	1	1
STARCHY FOODS:					
Sugar, granulated.....	1 teaspoon	20	—	—	—
Bread, white.....	1 slice	50	—	—	—
Bread, whole wheat.....	1 slice	50	1	4	—
Bread, rye.....	1 slice	50	1	4	—
Bread, corn.....	2 ounces	200	2	2	—
Rice, polished.....	½ cup	70	—	—	—
Rice, unpolished.....	½ cup	70	—	2	—
Potatoes, white, baked.....	1 medium	150	2	6	2
Potatoes, mashed.....	½ cup	100	1	3	1
Potatoes, sweet.....	1 medium	200	2	2	—
Squash, mashed.....	½ cup	50	2	1	2
Turnips, creamed.....	½ cup	100	1	2	1
Beets, diced.....	½ cup	40	2	1	1
Rutabagas, mashed.....	½ cup	50	—	6	10
FATS:					
Cod liver oil.....	1 tablespoon	100	10	—	—
Butter, June.....	1 tablespoon	100	6	—	—
Butter, winter.....	1 tablespoon	100	1	—	—
Oleomargarine.....	1 tablespoon	100	1	—	—
Lard.....	1 tablespoon	100	—	—	—
Olive oil.....	1 tablespoon	100	1	—	—
Cream (June).....	¼ cup	100	6	1	1
MISCELLANEOUS FOODS:					
Yeast.....	2 cakes	20	10	—	—
Mushrooms.....	10 medium	50	1	2	—
Honey.....	1 tablespoon	100	—	1	—
Sauerkraut.....	1 cup	25	—	—	—

FRESH VEGETABLES:

Spinach	1/2 cup	20	10	8	10*
Celery	2 sticks	20	—	2	2*
Beet Tops	1/2 cup	20	1	1	10*
Dandelion greens	1/2 cup	20	1	1	10*
Endive, chopped	1 cup	10	1	1	10*
Lettuce	1/4 head	100	2	2	5*
Rhubarb, sweetened	1/2 cup	100	—	2	6
Radish	6 medium	15	—	2	—
String beans	1/2 cup	25	2	1	—
Okra	1/2 cup	25	1	1	1
Green peas	1/2 cup	100	2	1	1
Carrots, raw	2 medium	50	6	6	2
Cabbage, fresh	1 cup	20	2	6	6
Chard	1/2 cup	40	2	2	4*
Cauliflower	1/2 cup	100	1	1	2
Onions, creamed	1/2 cup	100	1	2	2
Parsnips	1/2 cup	100	2	2	1
Corn, green	2 ears	100	2	2	2
Tomatoes, fresh	2 medium	60	10	6	10
Tomatoes, canned	1 cup	60	10	6	10

FRUITS AND NUTS:

Oranges	1 large	100	1	2	10
Lemons	1	30	1	2	5
Grapefruit	1/2	100	1	2	6
Apples	1	100	—	2	2
Prunes	4	100	—	1	1
Pears	1/2 cup	100	—	1	1
Grapes	1 bunch	100	—	1	1
Plums	1/2 cup	100	—	1	1
Peaches	1/2 cup	100	1	1	1
Peaches, fresh	1	35	1	1	1
Banana	1	100	1	—	2
Cherries	1/2 cup	100	1	1	1
Almonds	From 12 to 15	100	1	1	—
Pecans	From 12 to 15	100	—	2	—
Walnuts	From 10 to 12	100	1	1	—
Peanuts	20, single	100	1	2	1

*All green leaves contain vitamin C in proportion to the green pigment.

TABLE 3—DAILY RATIONS*

FOODS:	Average Portion	Calories	Vitamin A Units	Vitamin B Units	Vitamin C Units
BREAKFAST					
Oranges	1 large	100	1	2	10
Eggs	2	150	6	6	—
Toast (Whole Wheat)	2 slices	100	2	8	—
Butter	1 tablespoon	100	1	—	—
Milk (Whole Winter)	1 glass	100	1	1	1
Rice (Polished)	1/2 cup	70	—	—	—
Cream	1/4 cup	100	6	1	1
Sugar	3 teaspoons	60	—	—	—
Coffee	1 cup	—	—	—	—
Breakfast Totals		780	17	18	12
NOON MEAL					
Cold Ham	4 ounces	300	—	—	—
Canned Tomatoes	1 cup	60	10	6	10
Potatoes (Whole) baked	medium	150	2	6	2
Onions (Creamed)	1/2 cup	100	1	2	2
Bread (White)	2 slices	100	—	—	—
Butter	1 tablespoon	100	1	—	—
Luncheon Totals		810	14	14	14
EVENING MEAL					
Beef Steak	8 ounces	400	1	1	1
Potatoes	1 cup	200	2	6	2
Beans (Lima)	1/2 cup	125	2	4	—
Cabbage (Raw)	1 cup	20	2	6	6
Cheese	1 ounce	110	1	1	—
Radishes	6	15	—	2	—
Bread (White)	2 slices	100	—	—	—
Butter	1 tablespoon	100	1	—	—
Plum Sauce	1/2 cup	100	1	1	1
Cake	1 piece	100	—	—	—
Cream	1/4 cup	100	6	1	1
Sugar	1 teaspoon	20	—	—	—
Coffee	1 cup	—	—	—	—
Totals		1390	16	22	11
DAILY TOTALS		2980	47	54	37

*Daily requirements of average moderately active man: 3,000 calories.

rabbits, and guinea pigs have been used largely in these experiments partly because of the absolute control of their diets which it is possible to maintain.

Rats are used largely for the study of rickets because (1) they are small; (2) they are omnivorous, as is man; (3) their span of life is equal in one year to from 20 to 25 years of human

life, in two years from 40 to 50 years of human life, and so on. The young can be weaned and put on an adult diet at 3 weeks of age. (4) Another important reason, contrary to common belief, is the fact that the rat requires a good and rich diet, not only equal to but better than the diet needed by man, and rats quickly show the consequences of a deficient diet.

It was found that a diet composed of 20 per cent of raw cabbage gives an ample supply of vitamins B and C to prevent the development of the particular diseases caused by a deficiency of these vitamins. A diet composed of 50 per cent raw cabbage is necessary to prevent a disease due to a deficiency of vitamin A. For example, a diet composed of 20 per cent raw cabbage will prevent the development of beriberi which is due to a deficiency of vitamin B.

Two Americans, Stanton and Fraser, who studied the diets of the natives of the Philippine Islands found that rice polishings cured beri-beri. Other experiments proved that rice polishings contain only vitamin B in any appreciable amounts as this substance has little if any effect on other deficiency diseases. In like manner, many workers have proved the connection between vitamin deficiencies and other diseases, such as scurvy, rickets, polioneuritis, caries, and other manifested diseases and symptoms.

It would naturally be supposed that starvation or partial starvation would cause symptoms of one or another of the vitamin deficiency diseases; but oddly, this does not prove to be the case. No one of these deficiency diseases is caused by starvation or partial starvation so long as what rations there are, are kept in balance. This leads to the conclusion that there is a certain balance of vitamins needed in ratio to the amount of food needed or consumed. Exactly what this balance is and how it may be maintained requires additional investigation. We believe, however, from the work already done, that there must be 30 or more of each of these arbitrary vitamin units consumed daily to maintain health. These units are not any definite measure or weight of a vitamin but represent simply the relative ratio of vitamins needed in a diet. For instance, a man on a moderately active working diet needs about 3,000 calories of energy per day. This is twice the amount the same man would consume on a reducing diet of 1,500 calories; but if the reducing diet contains just one half as much of each of the same foods on the same list the same ratio of the three vitamins to the calories of energy or fuel consumed daily will be maintained in a working balance to insure health. In other words, the same number of arbitrary vitamin units will be consumed although according to weight or measure only half as much food is consumed. The sizes of the units are reduced only in proportion to the reduction in caloric content of the diet.

A COMBINATION COMPOUND AND ELASTIC MATERIAL IMPRESSION TECHNIQUE FOR PARTIAL DENTURES

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FOR many years, in fact, too many years, the dental profession as a whole has shied at partial dentures. Often, fixed bridgework was placed where it was contraindicated, and even more often, the extraction of the remaining teeth was advised and a full denture made. Most dentists regarded a partial denture merely as a preliminary step to a full denture.

The construction and maintenance of a partial denture that really functioned and gave comfort and benefit to the patient was considered too difficult for any except the few who had made an exhaustive study of the specialty and who, through many laborious steps in the technique, finally achieved an appliance that met with the approval of the laity and the profession.

It naturally followed that partial dentures constructed by these experts would necessarily have to be expensive. This, also, accounted for the lack of interest in partial dentures.

One of the greatest difficulties in successful partial denture construction has been the taking of the impression. It has previously been taught that the best materials for partial denture impressions were plaster of Paris, solvite, and complaster. In the last few years the use of the elastic impression materials has greatly simplified the impression technique. But even this did not solve the problem entirely. The following experience is a common occurrence in dental practice:

A perfect impression is taken in any plastic material that the operator may choose, the shade and bite are determined, and the patient is dismissed. The denture is completed in the laboratory, following the technician's choice of construction, whether it is a one-piece or an assembled casting. The dentist may employ Roach clasps, Akers clasps, wrought clasps, precision attachments, or any other type of attachments that he may wish to incorporate in the finished denture.

The partial denture is placed in the patient's mouth, and the bite is adjusted to function. The patient is asked how the denture feels. He replies that it is comfortable; in fact, he is scarcely aware of the fact that there is an appliance in his mouth. Then, too frequently, the patient returns in a few days with the complaint that the partial denture feels fine until he attempts to use it. Any pressure that he exerts on it immediately causes pain on some part of the ridge. The appliance is removed and often neither redness nor any other sign of irritation is found. What is the trouble?

It was after numerous unexplainable failures had occurred that some of the wiser men in the profession, chiefly, Doctor F. E. Roach, came to the following conclusion:

It was found necessary to make three classifications of the partially edentulous mouths: (1) those mouths in which the appliance would rest solely upon the remaining teeth—the tooth-bearing type; (2) those in which the appliance would rest solely upon the soft tissue—the tissue-bearing type; (3) those in which the appliance would rest partly on the remaining teeth and partly on the soft tissue—the tooth-and-tissue-bearing type.

The impression for the tooth-bearing denture may be taken with any plastic material that the operator prefers. The tissue-bearing denture is rarely used. *If an appliance is to receive any support from soft tissue, wholly or in part, that soft tissue must be compressed; that is, it must be displaced into its working position by the impression material. The impression of the compressed soft tissue must be retained in the finished impression (Figs. 1 and 2 at A).*

It is now known that the extension saddle dentures, which apparently fit perfectly, lacked functional comfort because the impression was taken with the soft tissue in a relaxed position. As soon as the patient exerts pressure on such a saddle the softer tissues are

displaced under the pressure of the saddle and the few remaining hard areas take the entire load. That is why the appliance hurts only when in use.

The technique that has been found satisfactory in obtaining the desired compression of the tissue, together with an accurate impression of the teeth, is that in which both compound and an elastic impression material are employed.

Before an impression is taken it is necessary to prepare the occlusal and incisal areas according to the technique to be employed and to clean and polish all the remaining teeth thoroughly.

COMPOUND IMPRESSION

The first step in this technique is the taking of the compound impression and it is upon the accuracy of this step that the success of the partial denture depends. If ordinary care is employed in carrying out the following steps the result will be a perfect impression.

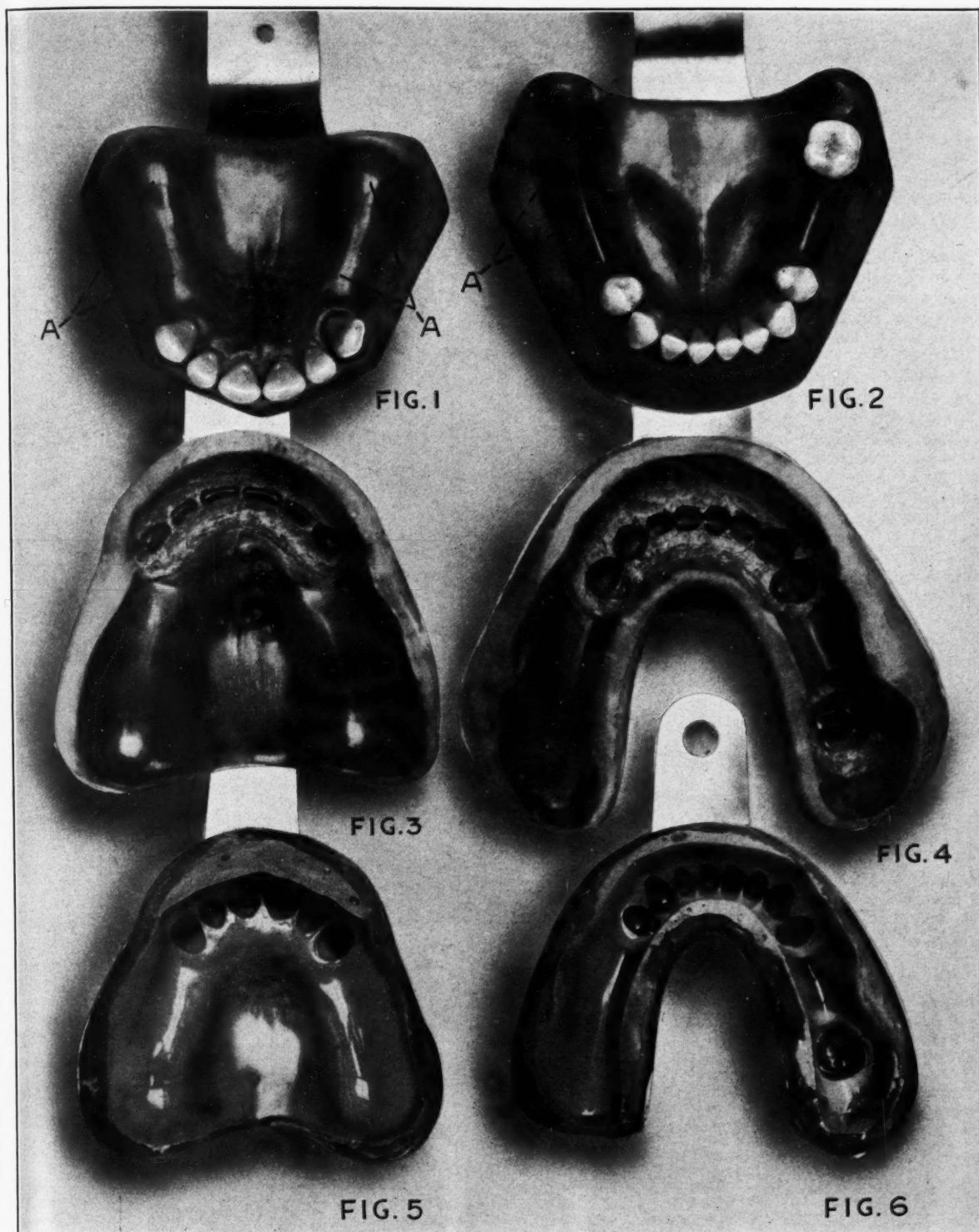
1. The tray should be slightly larger than would be used ordinarily for the denture.

2. The compound should be placed in the tray and the tray should be carried to the approximate position, the operator being careful not to carry it completely to place.

3. The impression should be removed from the mouth and thoroughly chilled in ice water. After the compound is hard through and through a sharp knife is used to relieve the draw around the remaining teeth.

4. The tissue side of the impression should be heated by means of hot water so that the compound is heated to a depth of approximately 2 mm. The impression should then be carried quickly to the mouth and placed in the correct position and held there under fairly heavy pressure. Pressure need be exerted only for about thirty seconds, as the bulk of cold compound will quickly chill the thin film of soft compound.

5. The impression is then removed



Figs. 1 and 2—A, Soft tissue to be displaced into working position by impression material. Impression of compressed soft tissue must be retained in finished impression.

Figs. 3 and 4—Impression of saddle areas, incisal edges, and occlusal surfaces; compound relieved around remaining teeth, showing trench present around anterior teeth.

Figs. 5 and 6—One unbroken piece of material showing compression of soft tissue, relief of soft tissue, an accurate impression of occlusal and incisal areas, and an accurate impression of the teeth.

and examined for detail. If sufficient detail and pressure are apparent and the impression contains all that is desired, step 6 follows. If, however, the compound impression does not appear to be satisfactory, steps 3 and 4 should be repeated as often as is necessary to obtain the desired result, the operator being careful, however, to prevent the teeth from reaching the tray.

6. With a sharp knife the compound is relieved around all the remaining teeth, cutting liberally labially, lingually, and buccally, and leaving only the impression of the incisal edges and occlusal rests. When relief has been completed, a trench at least one-half inch wide should be present around the anterior teeth and about five-eighths to three-fourth inch around the molars and bicuspsids, depending on the size, contour, and inclination of the remaining teeth. Any other areas that demand relief should be relieved at this time (Figs. 3 and 4).

7. The compound in the tray should be thoroughly washed in cold tap water and dried thoroughly with com-

pressed air. This is important. The impression is then ready for the final step.

IMPRESSION WITH AN ELASTIC MATERIAL*

In the usual manner, employing the equipment furnished for the purpose of taking Dentocoll impressions, half a stick of the elastic impression material is heated, and just before this material is ready to be removed from the boiler, with a pledget of cotton about the size of a hazelnut, saturated with alcohol, the entire compound impression is swabbed. The excess alcohol should be blown off with compressed air. The alcohol bath enables the elastic impression material to adhere to the compound.

The elastic impression material should be cooled in the usual manner in a pan of cold water, and placed in the compound impression. It is advisable to use the elastic impression material described here slightly warmer than is recommended for ordinary purposes. The entire compound im-

*Dentocoll described.

pression should be covered with the elastic material which should be forced into the impressions of the teeth with the fingers.

The tray should then be carried quickly to place in the mouth and held in position with the same amount of pressure that was originally used. The tray must be held under pressure while the assistant chills the impression for two minutes with a spray of ice water.

The impression, after having been thoroughly chilled, should be removed carefully, special care being taken that it is removed evenly. There is compression of soft tissue now where desired, relief of soft tissue where desired, an accurate impression of occlusal and incisal areas, an accurate impression of the teeth, and it is all in one unbroken piece of material (Figs. 5 and 6).

After the excess Dentocoll is trimmed from the periphery of compound the impression should be boxed and poured in any desired investment, plaster or stone. If pouring the model is delayed for any reason, the impression must be kept in tepid water.

A WAX CARVER TO REMOVE ROOTS

J. A. Wells, D.D.S., of Shawnee, Oklahoma, suggests the use of a wax carver as an instrument to use in the removal of roots. In cases in which it is not practical to use forceps or the ordinary types of elevators Doctor Wells suggests the use of a wax carving instrument.

The instrument is inserted in the interproximal space with the sharp point directed toward the apex. The instrument is forced gently into the

periodontal tissue and with a labiolingual motion it is worked well around the root circumference to obtain some space. When the space is procured the instrument is moved to the opposite surface and with a careful crowding force the root is loosened. It can now be removed without fracture and with a minimum amount of trauma.

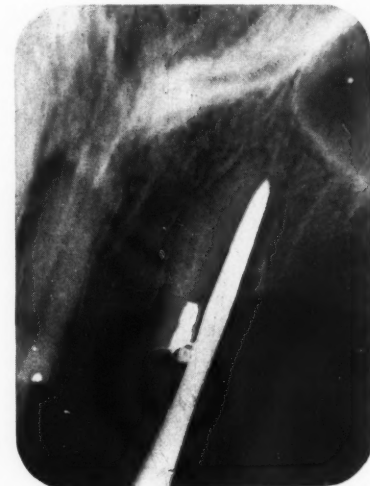
Doctor Wells lists the benefits of this technique as follows:

1. There is a minimum of trauma, and the external plates of bone are preserved.
2. Shock is reduced.
3. Time is saved.
4. The likelihood of "dry socket" is lessened.

The accompanying two roentgenograms show the instrument in position.



Lower Molar



Upper Cuspid

THE CASE OF ETHICAL PUBLICITY VERSUS DISPLAY ADVERTISING

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FREQUENTLY the discussion of a debatable subject serves to obscure rather than to clarify the real issue. A recent example of this is the furor over dental display advertising. The resolution passed by the House of Delegates of the American Dental Association, in session at Memphis, authorizing the Board of Trustees to perfect working plans for a committee on Educational Publicity was a relatively benign and inoffensive act in itself. The interpretation, discussion, and in some instances the action that it precipitated has produced a pathologic entity in dental economy.

A certain amount of fogging of the issue has been intentional and a greater part of the discussion has unintentionally had that effect. In any event, to blow away the chaff in order that we may observe the nature of the kernel is worth while. The situation is well exemplified by a few paragraphs which appeared in *Oral Hygiene*:¹ "To advertise or not to advertise—that was the question. Dr. Martin Dewey, the incoming president, has favored some form of ethical publicity for the dental profession and was fortified in his contention by a letter he had received from President Hoover, expressing interest in the plan." The paragraph in President Hoover's letter which referred to the matter reads, "I am interested to learn that the Association is considering a national educational campaign in the interest of dental health, particularly for children. The Children's Charter adopted by the recent White House Conference on Child Health and Protection included regular dental examination and care of the teeth as one of the rights of all children." A little further in the article, the following appears: "Ethical publicity and advertising has been tested quite thoroughly in at least two districts, Little Rock, Arkansas, and Scranton, Pennsylvania." Aside from the question of what one considers thorough testing, the reader is led to

believe that President Hoover placed his stamp of approval upon display advertising of the type of the Little Rock, Arkansas, campaign ("Nature's Jewelry"). This, so far as I know, is not the case. To favor and promote "a national educational campaign in the interest of dental health" and to propagandize the public through display advertising in newspapers and magazines are, in my opinion, two quite separate and distinct matters.

The reasoning in this article is like that in many articles which have appeared recently, and it is quoted only because it furnishes an example of how the issue has been clouded. Frequently, in writing of this sort, irrelevant data are adroitly introduced, and the reader is unaware that the writer has made no explicit statement to which exception can be taken; yet, the impression made is not borne out by a careful analysis of the data advanced for its substantiation.

A clear line should be drawn between the principle of public health education and any publicity that might be construed to fall under this head. The fact that it is a good thing to promote an intelligent understanding of dental health matters in the public mind does not mean that any measure which does so in any degree is a program to be advocated with whole-hearted approbation. In 1931, fifteen leading tooth paste and mouth wash manufacturers spent \$7,394,277 on magazine advertising. This had its effect on the public, but I question whether the public has through this advertising any more adequate conception of the value and proper use of these adjuncts to oral health than it did at the end of 1930. The advertisements undoubtedly sold tooth paste, but the educational aspects of these displays were quite incidental to the appeal to create a demand for a particular product. But this is to be expected from such advertising. Credit should be given to many advertisers for the honest effort they have expended to seek advice from the pro-

fession relative to misleading statements and criticism of their copy. In this way a decided improvement in the character of the advertisements has been effected. Many advertisers are still open to adverse criticism owing to warping of the facts presented and to claims of dental endorsement. The latter has been used to lead the public to expect too much of any one product or to have too much confidence in its individual supremacy.

The fact remains that the essential purpose of this advertising is to sell more products. And it is extremely unlikely that the dental profession can enter the same field without creating the idea in the mind of the public that its primary purpose is to increase the demand for dental service which can be rendered at a profit to the dentist. This idea will be established at the expense of the confidence now accorded professional opinion. It is as essential to good practice for the public to realize that advice is given from the standpoint of the patient's best interests rather than because of the financial gain to the dentist as it is for the profession to observe this principle. Most conscientious practitioners have at one time or another been hindered in performing operations indicated by the best principles of practice because the patient believed them to be motivated by pecuniary advantages. It is extremely important that the practices of dentists which promote this idea be exposed and condemned, and that no measures of advertising be instituted which might lead to this false impression.

When the question of display advertising as an educational measure appears certain angles at once present themselves for consideration. First, what are the objectives? These will depend on the individual concept and honesty of the dentist. I presume the real object lies somewhere between the desire to use advertising for purely educational purposes and the wish to create an antidote for the present economic depression by stimulating a greater demand for the services of

¹"Memphis Memories": Ethical Advertising, *Oral Hygiene*, Vol. 21, pp. 2628-2629, December, 1931.

members of the profession belonging to the society that advocates the advertising.

The advantage of display advertising copy lies principally in the attention accorded it, and secondarily in the novelty of beginning this type of campaign. Inherent in these advantages is the opportunity to raise funds from the profession and interested manufacturers of dental products to finance such advertising.

The ability of display advertising to bring patients into the dentist's office cannot be considered an advantage by decent practitioners irrespective of public interest. While it is certainly true that the patient must come to the dentist to obtain the benefits of dental service it does not follow that any attention he receives in a dental office is to his advantage. It is also evident to those of vision that any operations which are detrimental to the patient react upon the profession as a whole. The problem is, therefore, to educate patients to seek services from which they can reasonably be expected to benefit.

Control of the type of advertising and publicity that appears in the press might if rightly administered benefit the public. But to enter the same field of publicity employed by the advertising dentist of today in order to attempt to eliminate him through competition of buying space offers an attractive prospect to the advertising department of the newspaper but a less enviable outlook for the public and the dental profession. Many of the better newspapers are offering far more satisfactory cooperation with the dental societies upon the basis of public interest alone.

Doctor Martin Dewey has eloquently portrayed the materialistic advantages of this type of publicity² to the dentist without intimating to those who may be interested principally in the immediate financial return the dangers to their golden goose. To those who are not "practicing dentistry to make money"³ display copy in the advertising sections of newspapers and magazines assumes more than an incidental subhead of the broad subject of dental education publicity.

DISADVANTAGES OF DISPLAY ADVERTISING

There are three principal disadvantages to display advertising copy:

1. The danger already mentioned of changing the professional concept in the mind of the public.

²"What About Educational Publicity?" *Oral Hygiene*, Vol. 22, pp. 506-519, March, 1932.

³"What About Educational Publicity?" Part II, *Oral Hygiene*, Vol. 22, p. 740, April, 1932.

A. Unconsciously the average person will associate a certain amount of commercialism with dental copy appearing in places used for advertisements. This situation is obviously inadvisable.

B. It is extremely difficult to distinguish between dentists capable of rendering good professional service and those unqualified. The slogan we have heard so often recently, "See your dentist at least twice a year," is advice that it is well for the patient to heed only in proportion to the kind of service that his dentist can render. To place emphasis on membership in the American Dental Association or the local dental society probably gives a greater degree of security but cannot by any means be considered to underwrite the ability of practitioners. There are no requirements of performance prerequisite to membership in the dental societies which are not answered by the legal requirements levied on all licensed dentists, and to carry any such copy borders strongly on trade union tactics.

C. There is already in the mind of the public too great an idea that dental service is like purchasing a commodity of standard make—one for which the lowest bid represents a real economy. The error in this reasoning is obvious to the profession but less so to the public.

2. The difficulty of keeping the copy within unchallengeable ethical limits, has already been seen in the copy which has appeared in various localities and which certainly is open to question.

A. There is a vast difference of opinion as to what may be considered ethical copy. It does not depend on the truth of a statement alone. Doctor G. V. Black once withheld the results of one of his studies for some time because he knew the profession was not prepared to receive it, and that, if given out, it would be used injudiciously to the detriment of the public. This applies to many matters in public education. We must not only consider the facts given but the effect they will have on those to whom they are made available.

B. There is a distinction in the appeal made to different classes. When a gathering is addressed one may adapt his message to the particular group and when carrying on educational work in

institutions the age, intelligence, and social stratum of the group may be well considered, but the newspaper goes to a widely diverse group as do most magazines. It is significant that the magazines of highest literary type carry the least advertising of dental products.

C. The difficulty lies not only in that which is printed but in what is read into the advertisement by the public, because of limited knowledge of an intricate science and as a result of concepts that have been established by commercial advertising.

3. Questionable results of dental display advertising from an immediate and a long-run standpoint.

There is some reason to question even the immediate beneficial results which may arise from display advertising copy. We have been led to believe that the dentists in the community in which the advertising has appeared might expect a greater demand for their services. In localities in which this type of campaign has been inaugurated there appears to be a diversity of opinion on the matter. I have received communications from dentists and have been acquainted with many dentists who have stated definitely that there was no improvement in either collections or the demand for dental service. There are others, however, who state the reverse.

Of the 70 per cent of the population not receiving adequate dental service there are many who will not be affected by advertising because of the inability to pay for the service. The fact that there is a tremendous demand for work of low fee arranged for by dental societies in their program for dental relief is more intimately related to the reduction in the fee than to the publicity that it has received. It is also important not to increase the number of patients who are imposing on the profession because they recognize the need for dental service but have neither the ability nor the inclination to pay for the service they receive.

About 35 per cent of the dentists in the country are not members of the American Dental Association or its component societies. Some of these dentists are now advertising to the public, emphasizing the low cost of their services. It must be recognized that they will be in line to benefit from a program that stresses the need of dental service. Those who are avoiding the offices of ethical practitioners because of the fee they feel they cannot meet will be more inclined

to seek dentists of the advertising type. The advantage mentioned in some publications on this subject of the control of the funds expended by manufacturers of dental products through enlisting their financial support to an advertising campaign directed by dental societies is of questionable logic. In general, the man who pays the bill exercises considerable control over the character of the expenditure. There is not a little danger of the tail wagging the dog if this procedure were adopted.

STATE DENTISTRY AND INSURANCE DENTISTRY

In addition to the immediate detrimental results, there are those of a less obvious nature acting over a long period. Foremost in this group is the

effect display advertising may have on state dentistry and insurance dentistry. Contrary to the opinion of some that advertising of this nature would combat the tendency to state and insurance dentistry, there are reasons to believe that it would augment it.

State and insurance dentistry do not arise through ignorance of the value of dental service, but because of a knowledge of it. They become an issue when the demand for dental service exceeds the ability to procure it. There is nothing in the programs offered which materially reduces the costs of dental service to the patient. In entering the field of advertising, dental service is offered in competition to expenditures some of which are necessities and others luxuries. Manu-

facturers of products affected by whatever change may be accomplished in the expenditures of the group in procuring dental services might well feel that they would benefit by fostering a plan that would reduce the *per capita* cost of dental service. And we have reason to feel that their financial interest in such a program, together with their lack of knowledge of all ramifications of the subject, might influence them to appropriate considerable funds to the furtherance of mechanisms used in Europe. For these reasons, as well as those previously stated and because of the changing concepts of the public attitude toward the private practitioner, one may well question the ultimate advantages of display advertising.

DENTAL ASSISTANTS AND SECRETARIES

ELSIE GREY

Elsie Grey will be glad to hear from any readers, dental assistants, secretaries, dental hygienists and dentists. Questions are just as welcome as suggestions. It is hoped that this department will provide a free and helpful exchange of thought on new and better methods in dentistry. It is your department and we want you to take the fullest advantage of it. Write to Elsie Grey—she will help you.

QUESTION—I am sorry to say that I have not found much reading matter concerning the dental nurse, assistant, or secretary. Perhaps I do not know what literature to read. Would you kindly suggest some? In the June issue of THE DENTAL DIGEST are some helpful letter forms, so I am asking you to compose a letter or card form to be sent to patients who are delinquent in their accounts, asking for full or part payment for the dental services they have received.

ANSWER—If you will send us an addressed, stamped envelope we will give you information regarding reading matter. As for the letter forms, several types will be necessary. Cards are too stereotyped for this use. Each patient must be approached from another angle, according to the length of time he has been a patient, or his position in the community, or his standing commercially, or a dozen other reasons that must be considered before communicating with him.

Letter 1 can be used if no response has been received to a bill sent the first of the month immediately following the completion of the work, or immediately following the final appointment:

On the first of the month we mailed you a statement of your indebtedness for services rendered to date, to the amount of \$_____. We have not heard from you regarding this payment. Perhaps you prefer to pay personal bills on a specified date each month. We will appreciate your letting us know your wishes in the matter, for we do not desire to trouble you with unnecessary communications.

Thanking you for any courtesy you may extend, we beg to remain,

Letter 2 can be used if no response has been received to Letter 1 in two weeks' time:

On _____ we sent you a letter regarding the payment of \$_____, the amount due for services rendered, for which a statement had been mailed to you on _____. We prefer to believe that you have some good reason for your neglect of this matter. If it is not possible for you to make full settlement at this time, will you not call at my office so that we may arrange some plan that will be mutually agreeable for meeting your obligation? We will expect your prompt reply.

Letter 3 can be used if no replies have been received to the first two letters, and after another bill has been mailed the first of the second month:

We have sent you two statements for the amount of \$_____, for services rendered, which was due on _____,

and two letters, all of which have remained unanswered. As they have not been returned to us by the Post Office we assume you have received them. We hesitate to believe you wish to create an unfavorable reflection upon your integrity and credit standing by continuing to ignore your obligation. We would rather believe that you have good and sufficient reason for not remitting; however, if we do not receive a reply to this letter we will assume that you do not care what means we may decide to employ to protect our interests, and will proceed accordingly.

Letters 3 and 4 should not be used unless your employer has decided that he will place the account in the hands of his attorney or collection agency. After the first letter, the patient should not be written to again without discussing the matter first with your employer and securing his approval of the letter you intend to send. Letter 4 should be sent registered with a receipt requested:

Your account to the amount of \$_____ has been due for _____ months. You have failed to make any response to the statements and letters which we have sent to you. I deeply regret that your attitude forces me to assume that you have no intention of paying your bill; therefore, I shall be obliged to place this account in the hands of _____ unless I hear from you within the week. I would prefer not to take this drastic step which can only cause you unpleasantness and added expense. I trust you will see the wisdom of caring for this matter between ourselves.

We shall expect to hear from you by _____ if you desire to deal with us personally.

THE MAINTENANCE OF DENTAL PRACTICE

JOHN W. COOKE, A.B., D.M.D.

Boston

ADMITTEDLY, the present depression has been reflected in the success of dental practices, and many have wondered to what it is leading, and have hoped that some solution might present itself. It has been difficult to reach the point in reasoning where we must believe that world economics will be a long time in regaining what has been lost, if, in fact, it is ever regained. If we have not already done so, we must soon make the readjustment essential to a new perspective and look at the financial side of dentistry with new interest and in a new way.

During the past years when nearly everyone was prospering, dentistry, of course, showed an increase in some spots; but it rose to no such heights, and should, therefore, sink to no such depths, as some other fields of endeavor. It is natural, however, that others less fortunate now and more fortunate then, may forget that dentistry could not take full advantage of boom times, and should not in all fairness be compelled to sink too far below the surface now.

As a whole, we have all shown a healthy growth during ten years; this growth has not been mushroomed partly because of the obvious physical limitations of our calling and the definite financial restrictions that hamper us. In other words, it is impossible to go more than just so far, or to secure larger fees for similar efforts than other people in the profession. It has often been stated that in proportion to the time and effort involved, the returns from dentistry are small. The dentist's efforts take longer per unit, and the profit per unit is smaller than in many other professions.

The task of educating the public to pay large fees for a disagreeable performance, or, in fact, to induce people to pay any fees at all for a service for which they sometimes feel no need is something to think about. While the profession has by no means passed beyond the stage of emergency dentistry and relief of pain, the volume of this kind of work in the good dental practice is far from large and will not serve to pay very much rent.

Cost of Dental Care—There has been an appreciable amount of agita-

tion within the profession concerning the cost of dental care. The per capita expense for dentistry is low; nationwide figures state that each family averages about \$20 each year for dentistry, but there are a great many families in this country and only about 20 per cent of them receive any dental care at all, which may account for the small amount. One thing to remember is that those receiving good dental care certainly pay much more than the average for it.

If only the number of persons served is counted, it is obvious how limited is our usefulness. Divide the number of your patients into the gross receipts and you will have a fair idea of the per capita average in your practice; strike an average for the fifty persons receiving the most dentistry at your hands, or for the fifty paying the least, and you have more interesting figures. If you pursue the subject, calculate how many large families you care for, and how many husbands and fathers have more than five people in your care whose dental expense they are bearing. If you think at all of where your practice is going to or where it is coming from, you will make sure, in these times particularly, that these patients do not pay you more than your services are worth.

Although a great deal is heard about the cost of medical and dental care, not so much is heard about the cost of motor transportation. One is largely an involuntary item; the other a voluntary expenditure. We know that as a return on investment the compensations for medical and dental care are hopelessly inadequate. What we think about it makes little difference. Whatever the value may be in educating the public to what we think is our adequate compensation, this is a poor time to start, if, by educating, we mean higher fees. Dental fees are much more nearly correct than some economists would have us believe. They are calculated more in proportion to business expense than I think is sometimes realized. The net charge to the patient varies between rather narrow limits. A great many apparently high, routine fees are explainable on the facts of overhead and an

individual idea of what a particular type of practice is likely to demand and to appreciate.

It may be suggested that the public is rather selective in its economies. The budget is often cut in items that better judgment tells us is faulty wisdom. It is comforting, possibly, to say to ourselves that there seems to be money enough for the things that are wanted the most; that's right. But knowing the condition to be so does not change it the way we would like it changed, and will not make people pay bills any more promptly, if they pay them at all.

Credit Systems—We have all considered the wisdom of various systems of credit, and have heard some of our friends describe methods whereby the common complaints due to dental service are handled with no dissatisfaction; we are even solicited to maintain a department for the collection of bad accounts. Credit systems are important, and some bad bills will arise, but the foundation of any business effort and its perpetual backbone is the satisfied customer. Without this good will, all the collection agencies in the world could not keep a business above ground. We know, as well or better than our purely business acquaintances, that a determined debtor will beat us every time, and that a dissatisfied patient, for any cause, is a bad asset, possibly the worst. Careless people may be reminded; unfortunate people may be helped; but the really unwilling person must be left to enjoy the fruits of his victory; he will always beat us.

It is a common experience to have bills paid with a kind of grudging reluctance—not so much with a feeling of dissatisfaction with the amount as one of irritation that such a service should cost money at all. It is rather a pity that dentistry is not more of an ordeal and that it cannot occur only once. The character of the service is unpleasant and the continuous repetition of the service leaves a helpless form of rebellion which can sometimes take definite form.

What can be more natural than that our patients, having watched a great lowering in material values, should wonder if their expense for

dentistry does not decrease, and attempt to find cheaper service, no matter how reasonable our fees to them may have been?

Periodic Service—Benefits from our dental attempts, if any, are seldom immediately apparent following treatment. For example, in a mouth requiring extended attention, it takes months for even a small appreciation of results attained. No less, therefore, in the well cared for mouth, is it impossible to trace an immediate result of allowing routine dentistry to go neglected. Barring accidents and severe poor health, it may take as long for natural causes to undo our work, as it has taken us to attain for the patient a status of which we may be proud.

One of the few accomplishments for which we should receive thanks is the almost universal attempt to secure the patient's cooperation by insisting on periodic service. This has taken a good deal of education, but one rarely hears an objection, and patients undergo routine work for long periods without even realizing that attention was needed or being able to note that something had been done. This has placed a good deal of responsibility on the shoulders of the dentists, and while it may have opened the door to some careless efforts, on the whole the results have been excellent. (THE DENTAL DIGEST, January, 1932, page 34.)

A Typical Case—Let us assume a hypothetical case of which unfortunately there are too many replicas in actual experience for the situation to be entirely comfortable. You have a group of patients, probably a family, headed by the one who pays the bills. The first sign that the group of patients will be lost is a suggestion that nothing unnecessary be attempted. I find myself feeling some irritation at a remark like this. We have usually, either through cowardice or a mistaken sense of service, stopped far short of where we should have gone, and the possibility of an already inadequate program being still further restricted is not in the patient's best interests, to put it mildly.

Next we may notice that appointments are cancelled and that father and mother are postponing their work in favor of the children. Finally, if things get too bad, their connection with us is severed with the sometimes polite notification that they must seek dentistry more in proportion to their circumstances. Strangely enough, this happens regardless of the fee that has been charged. It is, of course, actuated by real financial stringency, but it is further motivated by the belief that our fees, along with every other

expense, have been higher than present circumstances warrant.

Maintenance of Existing Practice—It is no easy matter to accumulate a moderate-sized dental following. Most of the people now in our care will not go without any dentistry at all; they have been educated too well for that. The point is that *to maintain the progress already made, in the belief that things will change, is worth almost any sacrifice at the present moment.*

We enjoy the thought of our successes, and profit, if possible, by our failures. Most of our successes would have been the same had other hands performed the work, and some of our failures might have been turned into successes had those patients been fortunate enough to select someone else. I am offering as an opinion, in other words, that the item that either makes or breaks us is how we happen to fit temperamentally with those we serve. In cases in which changes to other dentists have been made, the patients get along just as well. It is, therefore, an excellent plan, while indulging in hopes that conditions will improve, to figure that those who leave us now because of expense will probably be so well taken care of that they will forget we ever existed.

SUMMARY

1. **Patients Who were Formerly Wealthy**—Our most serious possibility of loss is in our formerly wealthy patients who are honestly no longer able to pay us class A fees, and whose attendance in our practice will be lost if we leave the decision to them. If conditions improve this class will partly recuperate its losses; if conditions do not improve they and everyone else are licked, which is no problem at all, since everyone will be the same. We have been accustomed to try to take good care of those who paid us well. *We must continue to take good care of them as completely as we ever have, because we cannot suffer the justifiable criticism of doing only what work the patient can pay for. Every effort should be made to induce this type of patient to remain with us, at reduced fees, at cost, or even at our expense.* This should be done partly because I believe it a duty, and partly, because for purely selfish reasons we are the losers by doing anything else. Such efforts should anticipate the patients' doubts and questionings; to attempt to secure their return after they have once gone is useless. Exact methods of approach are not needed here for we have been handling human beings in far more difficult situations than this.

What patients want now is our assurance that we are for them and that they can depend on us to help see them through a bad emergency.

2. **Maintenance of Present Routine**—It may be true that prolonged neglect now may result in big cases later on, but no one ever did more than delude himself into thinking he was really making any money from the big case. When the dental patient develops a clinical need to the extent that the fee is so large that it is talked about, the operator's responsibilities are multiplied; his chances of success are lessened; and the likelihood of continuous service trouble will destroy whatever profit he may have felt he was making when he received his initial fee.

Even in the event that the dental public unanimously voted a two years' vacation from dentistry, their subsequent return to grace would be characterized by no great desire to be saddled with a sudden and a great expense. It is difficult for me to believe that we would do better than break even if we encouraged neglect and waited to do our work until our patients were again able to bear even a normal expense. We will resume what we have come to believe to be normal conditions sooner if we endeavor to maintain a routine already established, even at marked cost to ourselves, both in money and in strength.

3. **Maintain and Increase the Good Will Factor**—Dentistry is a personal profession, at least, general dentistry is. We meet the same group of patients again and again. Their dental problems are our obligations; their general problems become ours and ours theirs. We attempt to lessen the burdens of a disagreeable task. They may dislike our work, but if they lose confidence and respect for us as individuals and friends we are lost. I do not mean social acquaintances when I say friends. Our status with our patients rests squarely on their estimate of our conception of their problems, not merely dental.

Altogether we may suffer less through this period than some of our medical friends. I think we are better organized; but this organization has its weakness. We know our patients better, and because we know them better we must make more allowances for their circumstances. In a broad sense, and I think there is some idealism left in the world, it should be a pleasant obligation to go half or all the way toward seeing folks through part of their difficulties. This is a nice thing to dream about. A narrower meaning but no less vital

may be discovered in the fact that we need all the good will we can create, and must maintain all that has been gained. This is not the time to sell so much dentistry at our figure or to merchandise an expensive bit of dental material because it is expensive. I believe our salvation through this difficult period is to do our work at the patient's fee; to maintain our routine even at great cost; and to let our friends, the patients, discover, if they had not learned it before, that we are ready, willing, and anxious to help them through.

The world is having a lot of fun these days in trying to figure out means of presenting worthy people with the things they are supposed to need. Unemployment relief has reached proportions paralleling big business, and things are supplied as necessities which only a short time ago were luxuries. This may be all right; it may be that motor transportation has reached the stage where it ranks with one's feet as a necessary means of locomotion. We are being obliged to readjust ourselves to many new conditions; this may be one of them.

It seems to be the general opinion that the trouble with most persons as far as dental and medical service is concerned, is not that they are unable to pay for adequate service but that they do not wish to pay for it. Communities attempting types of group service at nominal fees for supposedly

worthy subjects have made the startling discovery that many are being treated who should not be included in this class, and that a limited supply is being exhausted through unwise and faulty distribution. All this diagnosis for the benefit of the public is probably theoretically correct.

We realize that the compensation for careful dental effort is poor, but this is a rather bad time to educate a buying public up to a price; it is, I think, the one time when the price should be brought down to the public, and the quality stiffened to maintain what we have accomplished and to improve on it. We will, of course, work harder for less money, but that is what most of the world is doing anyway; the change will not be so great, only the volume of work will increase.

We have been accused with some justice of being opportunists; dental service has been merchandised on much the same basis as electric refrigeration, only the product we sell has not been so reliable as the refrigerators. I honestly believe we will be the gainers by exchanging some of our supposed economic efficiency for the affectionate regard of our patients. The old family doctor, though extinct but possibly coming back, got a living out of his hard work; people didn't pay him much and sometimes they didn't pay him at all; but he went right on delivering his work, and he occupied a place in

the hearts of those he served that no modern efficiency expert can ever equal, unless he forgets some of the efficiency so far as economics is concerned and goes to work for folks because they are folks.

CONCLUSION

There is more dentistry to be done than we can ever try to take care of, but we have to try; if we go more than half way in offering a health service at fees commensurate with lessened circumstances, we will be able to be more selective in the type of patient on whom we spend our time, and this selection need have little to do with the ability to pay. It will, I feel sure, be largely governed by the willingness of the patient to help us and at the same time to help himself. We can, I think, make good service conditional upon cooperation and common sense.

Many of the high fees of the past have been earned through attempting to meet a whim and in trying to gratify a desire that has not been consistent with good sense. Except in a small number of cases, we have been helpless to control the home care of our patients; it may be no idle dream that this condition may change, and that patients may be made to realize that their salvation, physically as well as financially, depends on the observance of rules that are known to be fair and possible to follow.

DENTAL PHARMACY

In a paper read before the North Dakota State Dental Association in May, 1931, Doctor W. F. Sudro, Dean of the College of Pharmacy of the North Dakota State College of Agriculture, expressed the belief that dentists should display their professional qualifications along the lines of individual prescribing. Doctor Sudro contends that the dentist is qualified as much as the physician to write individual prescriptions and he does not see why the dentist is reluctant to make use of this qualification which is at present so grossly neglected. The physician's diagnosis is followed by the prescription calling for the proper remedial measures and the same sort of procedure should be adopted in a greater measure than that which now exists by the dental profession.

In the opinion of Doctor Sudro, if the dentist exercised this all-important function of his profession, that of writing individual prescriptions, it would be a potent factor in (1) establishing the proper relationship of confidence between the dentist and patient; (2) fostering the recognized importance of oral hygiene, and (3) catering to the exact needs of the patient, which is what every good dentist should do.

The best plan is for the dentist to write the prescription for the individual patient, but, if such procedure is deemed inadvisable, it is suggested by Doctor Sudro that the dentist file with his pharmacist the particular formulas which he desires to use and

then by a proper indication on the prescription blank the patient would be able to secure the preparation advised by his dentist. These preparations could well be prepared by the pharmacist in convenient quantities in advance, thus making them available at a moment's notice.

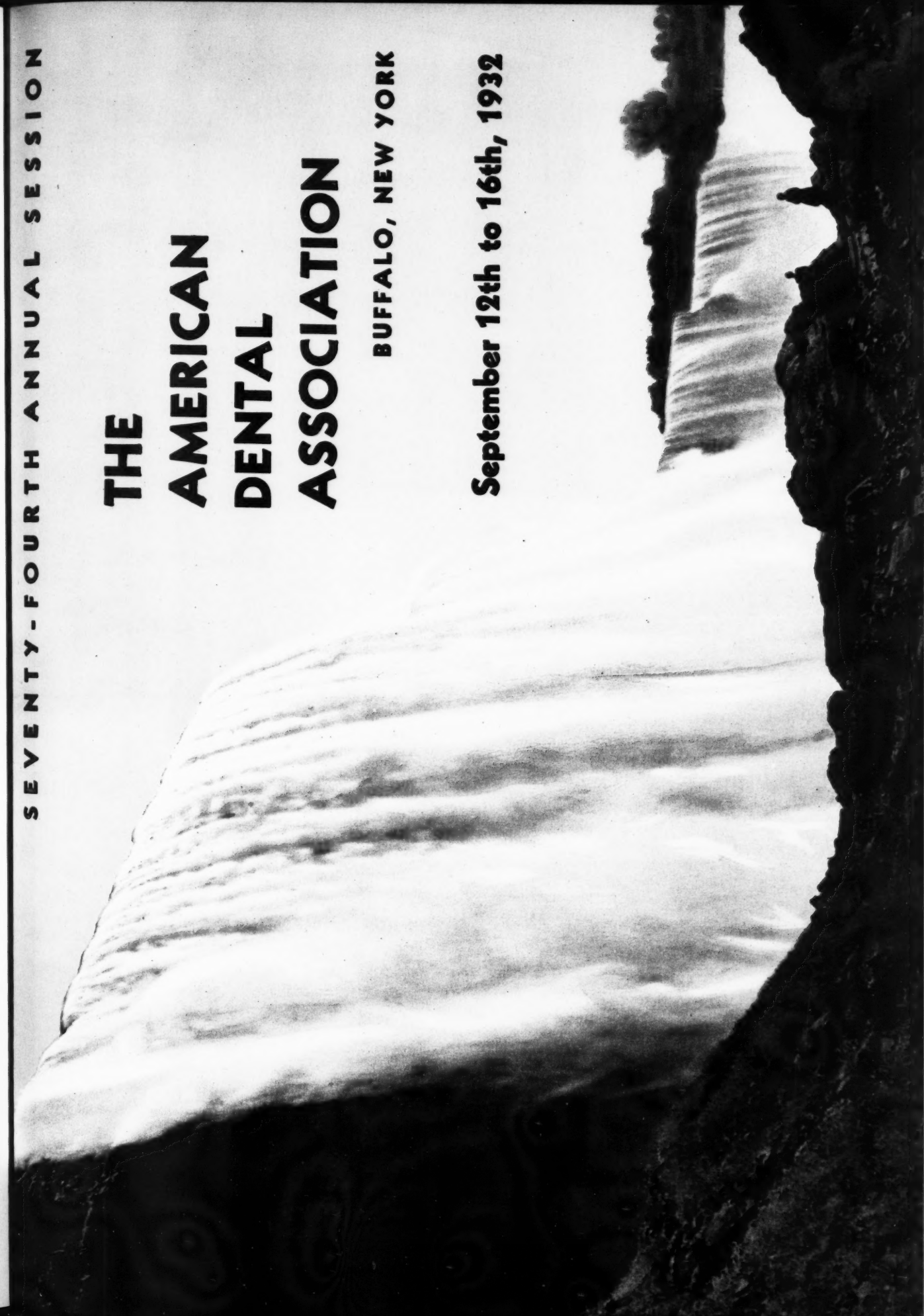
Doctor Sudro said that an investigation revealed that the average student spent only forty-five seconds in cleaning teeth. It is evident that a thorough job of cleaning cannot be done in this time. While general information may be of value in this respect, Doctor Sudro believes that even in the matter of tooth-brushing written advice given to a patient directly by a dentist will result in much better response.

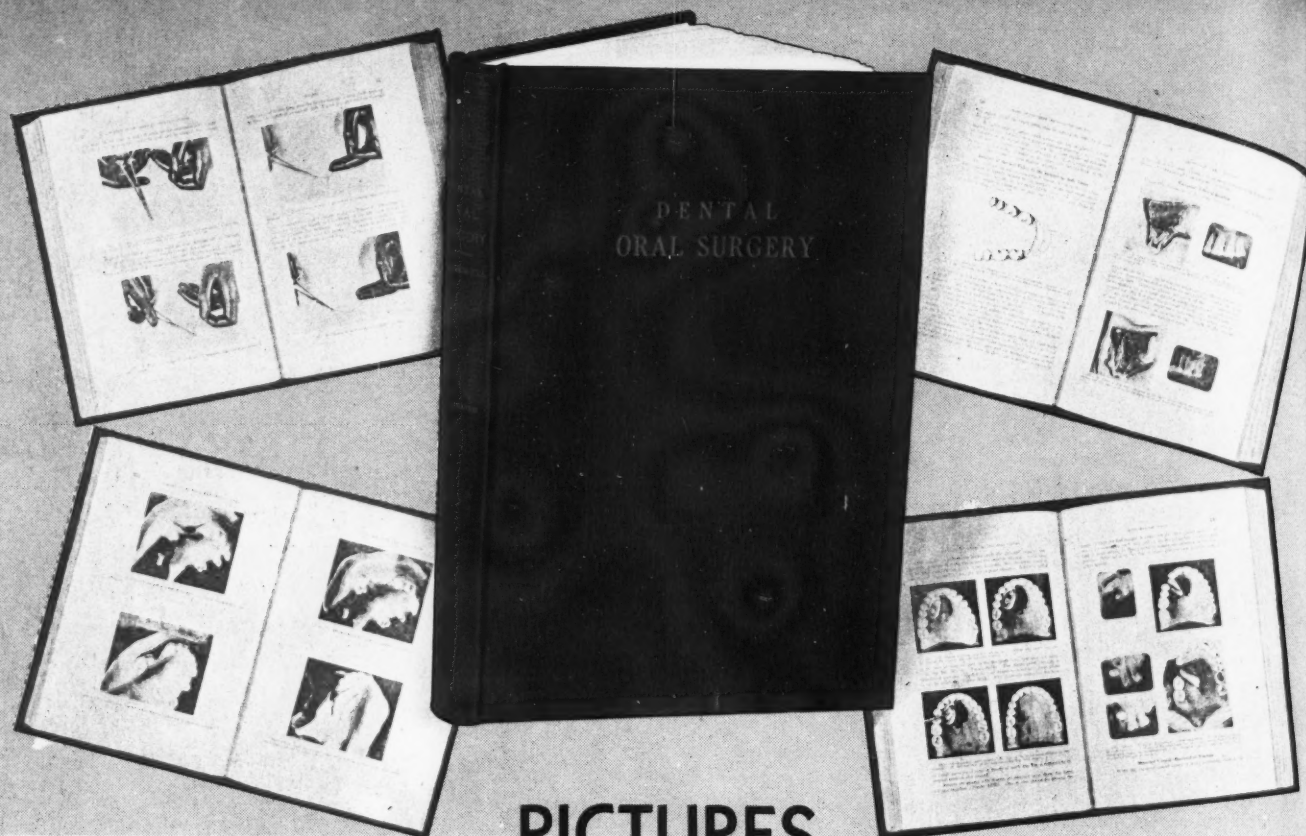
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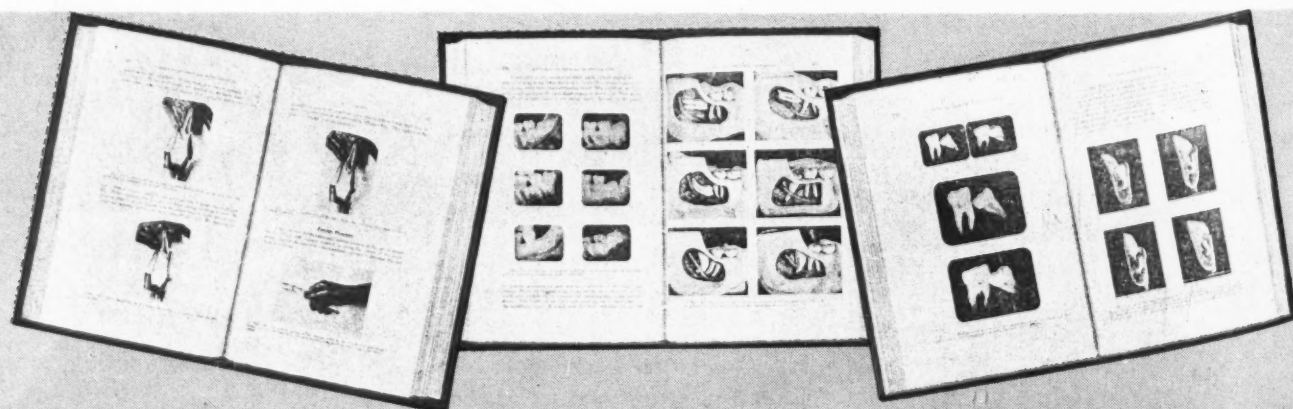


PICTURES THE UNIVERSAL LANGUAGE

THE enthusiastic reception of THE DENTAL DIGEST has proved that the understanding of scientific literature is facilitated when the subject matter is generously and adequately illustrated. Doctor Wilton W. Cogswell was working on this theory eight years before the idea of the new DENTAL DIGEST was conceived. The re-

sult is his new textbook, DENTAL ORAL SURGERY, which conforms so closely to the style of this new dental journalism that THE DENTAL DIGEST is confident and happy in offering it to its readers as the most modern textbook on the very important subject of the removal of teeth. It is a textbook every dentist should have.

SEE OPPOSITE PAGE FOR MORE COMPLETE DESCRIPTION



"Are You Satisfied With Your Oral Surgery Technique?"

If all practicing dentists were asked this pointed question it is probable that the majority of them would frankly confess themselves in need of continuous improvement in surgery technique. Perfection is difficult or impossible to reach in a branch of dentistry containing as many variable features as dental oral surgery. But to progress continuously in knowledge and ability is the one thing you can do for yourself, your patients and your profession.

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DENTAL ORAL SURGERY is a book that will please you immensely from a reader's standpoint. The whole plan of the book is to facilitate understanding. For instance: one minor feature that will appeal to every reader is the fact that all anatomic illustrations are limited to a view of one side of the mouth only. This prevents confusion and the necessity of readjusting your viewpoint to different sides of the mouth.

DENTAL ORAL SURGERY contains over 500 splendid illustrations, many of them made from soap and wax models carved by the author. It is beautifully bound in red imitation leather and sells for \$10. It is a book from which every dentist will derive a great deal of pleasure and profit. Order your copy today from your dental dealer or send us the coupon on this page.

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THE PUBLISHER'S NOTE BOOK

IN the seven issues so far published this year (not including the current number) there have been printed a total of 593 illustrations—many in full color—a monthly average of about eighty-four editorial illustrations. This seems to indicate that the staff is trying hard to live up to its promise of a dental magazine that tells the story in pictures wherever it is possible to do so.

Numerous illustrations are, of

course, furnished by authors contributing to the magazine; but in many cases it is necessary for the journal's own photographer to capture in film, under the author's direction, those points which the author wishes to illustrate. In other instances, drawings are necessary and the editor has so far been successful in securing the services of artists able to interpret authors' ideas.

Several months ago, in the April issue, *THE DIGEST* originated the idea of presenting dental information in pictorial chart form, the organization of a mouth health campaign in

British Columbia having been shown in this way. Incidentally, the total of illustrations mentioned counts this chart as only one illustration although it really is composed of twelve individual drawings. Readers' ideas for similar pictorial charts will be welcomed by Doctor Ryan.

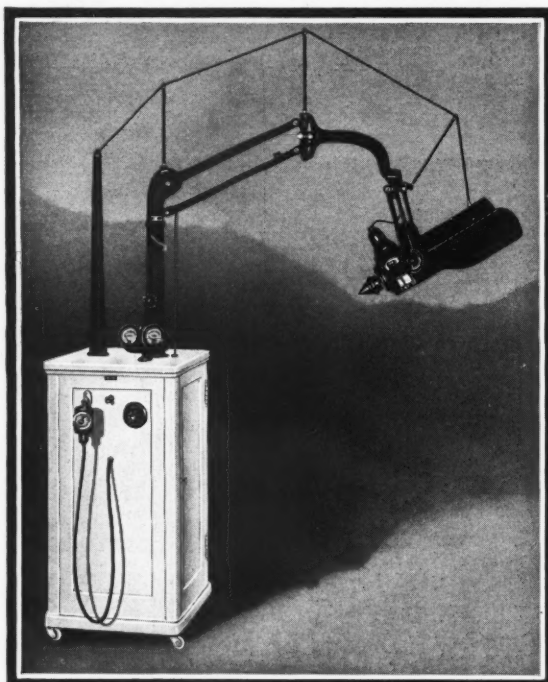
The magazine's circulation department continues to receive many letters from readers, around the first of the month, expressing the fear that the new number has gone astray. The journal is published, however, on the fifteenth of the month of issue, as explained in this column last month.

Hundreds of readers have ordered the new binder and many have written to ask what has happened to their orders. The manufacture of so elaborate a binder takes a good deal of time, which accounts for the delay in shipping, but binders are now being mailed daily; perhaps before this reaches print all current orders will have been filled.

In the December number we expect to publish a cross reference index of the current volume, making it just as complete as we can, so as to afford the greatest possible ease in locating references to specific topics.

Once again, at risk of tiresome repetition, let me say that Doctor Ryan welcomes letters offering constructive suggestions for the improvement of the magazine.

MERWIN B. MASSOL, *Publisher*



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THE call for copies of certain back issues of *THE DENTAL DIGEST* has been so great that we find our reserve supply of at least four issues completely exhausted. Many readers have misplaced one or more numbers and there are others who subscribed in the middle of the present volume and wish to complete the year's file for binding purposes. So this announcement is, more or less, a call for help. If any readers have copies of the January, March, April or May issues that they wish to dispose of we will be glad to pay for them at the rate of twenty-five cents a copy. Please let us know how many copies you have before sending them. We will send you the money at the time or extend your present subscription for that amount, whichever you choose. We are certain that your assistance in helping us obtain these copies will be appreciated by those who wish to complete their files.

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LETTERS

This communication has as its object cordial congratulations on the appearance of the new DENTAL DIGEST. With regard to the typographic presentation, the quality of the paper, the faithfulness of the engravings, and the usefulness and science of the articles contained in it, nothing which is not in its praise can be said; therefore, it has come to fill a great need in the profession.—JOSE V. MORENO, D.D.S., *Guana-jay, Prov. Pinar del Rio*

I wish to express my appreciation of THE DENTAL DIGEST in the new form. I have been receiving several dental magazines but when I want a really up-to-date and practical dental magazine I turn to the new DENTAL DIGEST. I gain much more practical knowledge from this one magazine than from all of the other dental magazines to which I subscribe.

I am more than pleased with the book and trust the good work will be kept up.—N. M. WARY, D.D.S., *Newman Grove, Nebr.*

Upon receipt of the first copy of your new magazine, I was astounded at the marvelous cuts, the lifelike colors, and the brilliant presentation of the carefully selected subject matter.

I was fearful that it might be an inspired edition because of its newness and the desire to produce something quite different, but here I have before me the latest number which not only maintains the high standard of the first but with each succeeding month appears to grow better.

I am most hearty in my congratulations. More power to you!—FRANK P. DUFFY, D.D.S., *West Warwick, R. I.*

I have just returned from the Sioux City District Dental Meeting and while there I showed my friends your magazine which featured Dr. Jaffe's article, and told them that it was just one of many fine articles in THE DENTAL DIGEST. I look forward each month to the next issue as I think you have a very fine magazine now.—R. W. ELLIS, D.D.S., *Salem, S. D.*

You are to be complimented on your departure from regular magazine style, your many new ideas and fine illustrations. I assure you that I look forward to receiving each new issue.—ARTHUR KLAFFENBACH, D.D.S., *Iowa City*

We want to express our appreciation of the worth of THE DENTAL DIGEST. We enjoy particularly the articles on x-ray diagnosis and the "helpful hints."—DOCTORS ELLIS & ELLIS, *Lemmon, S. D.*

After examining and reading the first few issues of THE DENTAL DIGEST, I want to compliment you on this fine publication. The material is very instructive and the illustrations enable one to visualize the subjects immediately.—PAUL J. AUFDERHEIDE, D.D.S., *Cleveland*

I have seen several copies of the new DENTAL DIGEST and approve of it so far very much. I would appreciate it if you would place me on the mailing list.—HENRY CLINE FIXOTT, D.D.S., *Portland, Ore.*

One is apt, after a few years of experience in professional or business life, to look rather skeptically upon anything that seems too good, too pure, too beautiful, or too much for the money. So, perhaps, one

shouldn't be blamed, if, upon receipt of the first number of THE DENTAL DIGEST under your editorial management, for a feeling that an impossible standard has been set.

The writer pleads guilty. He waited for the February number. Again the thought of a "new broom." The March number is here. The original standard is maintained. The doubting Thomas doubts no longer but hastens to congratulate you and the publishers on something new, beautiful, delightful, interesting, educational, and readily assimilable in a dental magazine.

May it live long and prosper as its unusual merits are widely recognized.—GEORGE R. WARNER, M.D., D.D.S., *Denver*

YOUR DENTAL DIGEST is wonderful, many times worth the price of subscription and should be paid on time, too.—ELLIOTT G. STEVENS, D.D.S., *Champaign, Ill.*

It is not often that I write to express my appreciation for things in my profession, but after having read three of the numbers of DIGEST, I feel that we have a work that many dentists should support.

I have enjoyed each issue, and have read several of the articles over a second time.

I thank you for your foresight and wish you future success.—E. CRONLEY ELLIOTT, D.D.S., *Lexington, Ky.*

I certainly want to compliment you on the manner in which the DENTAL DIGEST is made up. I believe that it is going to be one of the most helpful dental journals published today.—CLARKE B. WEEKS, D.D.S., *Lakeland, Fla.*

Of all the dental magazines I have ever read, yours is the finest ever published. It is both instructive and helpful.—S. P. ROSE, D.D.S., *Astoria, New York*

I think the magazine is by far the "class" of dental literature. Your illustrations are excellent. Keep up the good work.—C. J. MARCEREAU, D.D.S., *Detroit*

I do not want to miss a single copy. This magazine is surely the finest publication in the dental field. It is the only dental magazine that I want to preserve for the future. I feel sure that you will meet with well deserved success with this new venture.—V. H. NILSSON, D.D.S., *Minneapolis*

I sincerely trust the readers of THE DENTAL DIGEST will be legion very soon; for there's no gainsaying the fact of its attractive makeup and its edifying qualities. Moreover it has a distinctive personality and a definite appeal. Hence it should be in every dental office, more particularly in the busiest one. Congratulations!—AURELIO RAMOS, D.D.S., *Philippine Dental College, Manila, P. I.*

Please accept my few humble words of appreciation for the new DENTAL DIGEST. I believe it to be of more practical value than any publication the dental profession has yet had, notwithstanding that it is a work of art.—L. B. YOUNG, D.D.S., *Wayne, Nebr.*

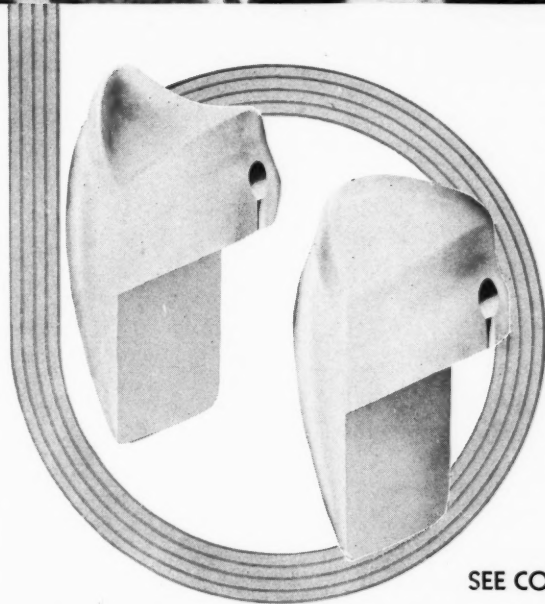
I am exceedingly delighted and much pleased upon receiving your first three copies of the new DENTAL DIGEST. They are indeed of great help to the dental profession. Let me express my sincerest admiration and recognition of your publication by the dental practitioners.—LINO A. MENDOZA, D.D.S., *Manila, P. I.*

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